# SERVICE MANUAL

US Model AEP Model E Model



'Dolby' and the double-D symbol are the trade marks of Dolby Laboratories Licensing Corporation. Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

# **SPECIFICATIONS**

Recording system

4-track 2-channel stereo

Fast-forward and rewind time

Approx. 90 sec. (with C-60 cassette)

Bias frequency 105 kHz

Signal-to-noise ratio (NAB, at peak level)

Cassette Dolby NR button	OFF	B-TYPE ON	C-TYPE ON
TYPE IV (Sony METALLIC)	59 dB	66 dB	72 dB
TYPE III (Sony FeCr)	60 dB	67 dB	73 dB
TYPE II (Sony UCX)	58 dB	65 dB	71 dB

54 dB

Total harmonic distortion

TYPE I (Sony BHF)

1.0% (with Sony METALLIC and FeCr

cassettes)

Frequency response DOLBY NR OFF

• With TYPE IV cassette (Sony METALLIC)

61 dB

67 dB

20 - 19,000 Hz

30 - 17,000 Hz (±3 dB)

30 - 13,000 Hz (±3 dB, 0 VU recording)

• With TYPE III cassette (Sony FeCr)

20 - 19,000 Hz

30 - 17,000 Hz (±3 dB)

• With TYPE II cassette (Sony UCX)

20 - 19,000 Hz

30 - 17,000 Hz (±3 dB)

• With TYPE I cassette (Sony BHF)

20 - 17,000 Hz

Wow and flutter

0.04% WRMS (NAB)

±0.14% (DIN)

Inputs

Microphone inputs (phone jacks) Sensitivity 0.25 mV (-70 dB)

For a low-impedance microphone

Line inputs (phono jacks) Sensitivity 77.5 mV (-20 dB) Input impedance 50 k ohms

Tape Transport Mechanism

TCM-110R1, R2

Outputs

Line outputs (phono jacks)

Rated output level 0.44 V (-5 dB) at load impedance 50 k ohms, with the LINE

OUT/PHONE control at "00"

Output level variable from 0.014 V to 0.44 V

Load impedance over 10 k ohms

Headphone output

Output level variable from -26 dB to -56 dB at a load impedance of 8 ohms

General

Weight

Power requirements 120 V ac, 60 Hz (US model)

220 V ac, 50/60 Hz (AEP model) (240 V ac adjustable by authorized Sony

personnel)

110, 120, 220 or 240 V ac adjustable,

50/60 Hz (E model)

Power consumption 25 watts (US, AEP model)

27 watts (E model)

Dimensions

Approx.  $430 \times 105 \times 275 \text{ mm (w/h/d)}$  $(17 \times 4^{1}/4 \times 10^{7}/8 \text{ inches)}$ 

including projecting parts and controls

Approx. 6.2 kg (13 lbs 11 oz)

0 dB = 0.775 V

## **SAFETY-RELATED COMPONENT WARNING!!**

COMPONENTS IDENTIFIED BY SHADING AND MARK M ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.





# **FEATURES**

Auto-reverse recording and playback

Continuous recording and playback of both sides of the cassette is possible without turning the cassette over. When the tape reaches its end, the roto-bilateral record/playback head reverses position and the other side of the cassette will be recorded or played back automatically.

The roto-bilateral head assures the same performance characteristics in either tape transport direction.

#### Quick reverse

The head reverses position quickly when the tape reaches the leader tape at the end when recording or playing back the front side of a cassette, allowing recording or playback to be continued with little interruption.

Digital level monitor

The digital level monitor displays the input level exceeding the proper recording level in dB so that you can readjust the recording level appropriately.

#### **Automatic fader**

During recording, special fade-in and fade-out effects can be made automatically simply by pressing the AUTO FADER button.

#### **Automatic attenuator**

The automatic attenuator lowers the recording level automatically when the level of input signals is beyond the proper recording level. This assures undistorted recording.

**Audio memory** 

The recording and playback settings: the recording level, the Dolby NR setting, for example, can be memorized and instantly retrieved. Two settings can be made for each type of tape.

**Function memory** 

A total of 8 steps of tape operations controlled by the ▶, ◄, ▶▶, ◄ and RESET buttons can be memorized and activated in the memorized sequence by pressing one button.

# Cassette stabilizer

The cassette stabilizer holds the cassette firmly to suppress vibration and makes the reproduced sound clear and the location of the sound image stable.

Digital display

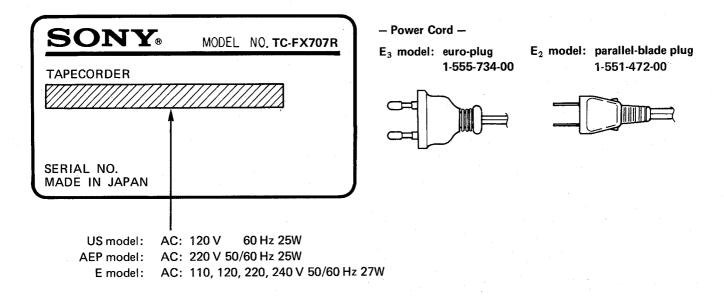
The recording level, recording level balance and LINE OUT/headphone level are displayed in digits for accurate and easy reading.

#### Other useful functions

- The LA (LaserAmorphous) record/playback head provides a wider dynamic range and a more extended frequency response.
- The C-type Dolby NR system reduces tape noise twice as effectively as the conventional B-type system.
- The AMS (Automatic Music Sensor), blank skip and music scan functions allow you to locate the desired selection easily.
- The DIRECTION MODE buttons control the direction of tape movement.
- The automatic tape select system adjusts the cassette deck to achieve the optimum recording and playback characteristics for each tape type.
- The digital linear counter indicates the elapsed or remaining recording or playback time in minutes and seconds. The pre-end winker warns that the tape is about to run out during recording.
- Remote control operations are possible.
- The deck can be turned on and off using an optional timer.

#### MODEL INDENTIFICATION

- Specification Label -



# SAFETY CHECK-OUT (US Model)

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

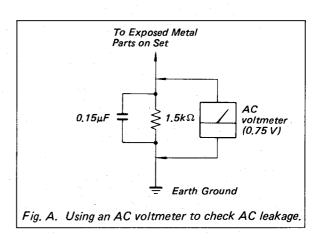
Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

# LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

- A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments
- 2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.

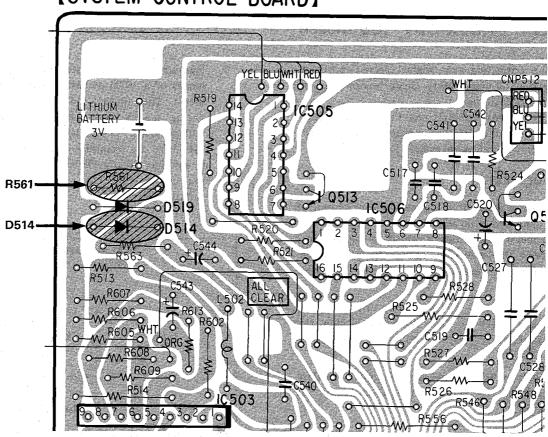
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)



# **Servicing Precaution**

- 1. Before starting to replace ICs or other parts, be sure to turn off the back-up battery by disconnecting R561 or D514.
- 2. After completing to repair, connect R561 or D514 and proceed as follows as soon as possible, to return to normal back-up mode. Otherwise, the energy of the back-up battery will be wasted.
  - (1) Turn on the power.
  - (2) Short the "ALL CLEAR" jumper wire instantly with a screwdriver.
  - (3) Turn off the power.
- 3. When the power is turned off, and the back-up battery is connected, never short the conductive pattern on the circuit board.
- 4. When CT301 is adjusted, an insulating tube should be over an adjustment screwdriver used.

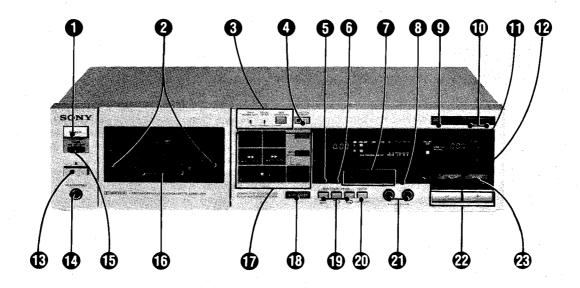
# [SYSTEM CONTROL BOARD]



# **FUNCTION OF CONTROLS**

Each number in the text is keyed to that of the photo and illustrations.

#### Front panel



#### **1** POWER switch

This turns the power on or off.

#### **2** Cassette stabilizer

# **3** TAPE OPERATION button and indicators

To activate the AMS/blank skip function or the music scan function, press the TAPE OPERATION button, so that the corresponding indicator lights up. Each time the button is pressed, the AMS/BLANK SKIP indicator, MUSIC SCAN indicator or no indicator lights up in sequence.

# **4** FUNCTION MEMORY button and indicator

Used for memorizing a series of tape operations and starting the memorized operations. (See "Function memory" on page 14.)

#### 6 RESET button

Press to reset the tape counter to zero.

#### **6** MEMORY button

Used for the memory stop/play. See page 14. When this button is pressed, the MEMORY indicator appears on the display.

# **7** AUTO/III tape select button and tape type indicators

When a cassette is inserted, the appropriate tape type indicator lights up and the optimum recording and playback settings for the tape are set by the automatic tape select system. Press this button if the indicator and the type of tape inserted are not the same. This button is operable only when a cassette has been inserted.

#### **3** DOLBY NR button

Press this button to select the Dolby\* NR system when recording or playing back. The type of Dolby NR system applied will change in the following sequence when the button is pressed: Dolby NR B type (B indicator illuminates), Dolby NR C type (C indicator illuminates), Dolby NR off (indicator off).

#### **OWRITE** button

When memorizing the recording and playback settings on the AUDIO MEMORY buttons, first press this button, then the A or B AUDIO MEMORY button.

# **(I)** AUDIO MEMORY buttons and indicators

The recording and playback settings for each type of tape can be memorized on A and B buttons. The memorized settings can be retrieved simply by pressing the A or B button. See page 10.

# **1** LINE OUT/PHONE level control button

This button adjusts the output level of the LINE OUT jacks and the headphone level. When the + side of the button is pressed, the level will increase by 2 dB, and when the - side is pressed, the level will be attenuated by 2 dB, up to 30 dB. When the button is kept depressed, the level changes continuously. The attenuated level is indicated on the audio level display. The digits "00" indicate the maximum output level.

<sup>\*&</sup>quot;Dolby" and the double-D symbol are trade marks of the Dolby Laboratories Licensing Corporation. Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

#### BALANCE (recording level balance) control button

This button adjusts the balance of the left and right channel recording levels. When the L side of the button is pressed, the sound image to be recorded will be moved to the left as the level of the right channel is attenuated. When the R side is pressed the sound image will be moved to the right. The difference of the level in dB between two channels is displayed on the audio level display. Normally set the balance to 00.

Example of the balance setting





The right channel level is 2 dB higher than the left channel level.

#### ⊕ ≜ (eject) button

Press this button to open the cassette holder.

#### **MHEADPHONES jack** (stereo phone jack)

Connect a pair of headphones either to monitor the input signals to be recorded or to listen to a recording in the playback mode.

#### TIMER switch

You can set the unit to record or playback at a predetermined time by connecting any commercially available timer.

#### **B** DIRECTION indicators

- (forward) indicator: Lights to show that the front side of the cassette is being played back or recorded on.
- ⊲ (reverse) indicator: Lights to show that the reverse side of the cassette is being played back or recorded on.

For a timer-activated recording or playback, make sure which indicator is illuminated.

#### **(7)** Function buttons

It is possible to switch directly from one mode to another.

- ▶ (forward) button: Press this button to play the front side of the cassette. To record, press this button while holding the ● button down. The tape is transported to the right.
- ◄ (reverse play) button: Press this button to play back the reverse side of the cassette. To record on the reverse side, press this button while holding the ● button down. The tape will be transported to the left.
- ▶► (fast-forward) button: Press this button to advance the tape rapidly to the right. It is also used for the AMS and music scan functions.
- (fast-reverse) button: Press this button to advance the tape rapidly to the left. It is also used for the auto play, AMS and music scan functions.
- (stop) button: Press this button to stop the tape, or to disengage the button or the FUNCTION MEMORY button.
- REC (record) button: Press this button together with the ▶ or ◀ button to start recording. When this button is pressed for recording level adjustment, the deck will detect the tab of the cassette and the indicators of the ◀ and ▶ buttons will blink to indicate that a recording can be made. If the tab on one side is removed, the corresponding indicator will not light.
- O REC MUTE (record muting) button: Press this button to eliminate unwanted material and to insert a blank space during recording.
- PAUSE button: Press this button to stop the tape running for a moment during recording or playback.

#### ® AUTO FADER (automatic fader) button

Press this button to fade in or fade out the recording.

#### **® DIRECTION MODE buttons**

Depress one of the buttons to select the mode of tape movement for recording and playback.

- (one-cycle) button: To record or play back both sides of the cassette. If this button is pressed when the reverse side of the cassette is being recorded or played back, the tape will stop at the end of that side.
- (five-cycle) button: To play back both sides of the cassette five times. If this button is pressed when the reverse side of the cassette is being recorded or played back, the tape will stop at the end of the 5th playback of the reverse side so that the front side will have been played back only four times.

The recording will stop at the end of the reverse side.

#### **@ QUICK reverse switch**

Depress this switch (a ON) to reverse the direction of the tape quickly during recording or playback, when the tape reaches the leader tape.

To release the quick reverse function, press the switch again. The tape will reverse the direction at the end of the leader tape.

This quick reverse function operates only from the forward direction to the reverse direction.

#### MIC jacks (phone jack)

Any low-impedance microphone equipped with a phone plug may be used.

# **PREC LEVEL** (recording level) control buttons

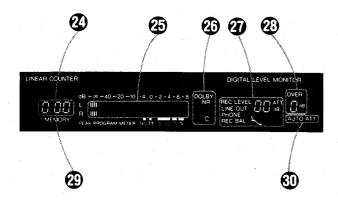
Adjust the recording level by observing the peak program meters and the digital level monitor. Press the + button to increase the level, and the – button to decrease it. Each time the button is pressed, the level will change by 1 dB. When the button is held down, the level will change by 2 dB continuously. The attenuated level is displayed on the audio level display. The digits "00" indicate the maximum level.

#### **®** AUTO ATTENUATOR (automatic attenuator) button

Press this button to attenuate the preset recording level automatically when the input level is too high, so that the recording will not be distorted. The AUTO ATT indicator appears on the display. Press this button again to cancel the automatic attenuator function.

When the automatic attenuator is engaged, the digital level monitor display does not operate and always indicates

#### Display section



#### ② Digital linear counter

Indicates the tape running time. See "Digital linear counter" on page 11.

#### Peak program meters

These meters show the peak input level of each channel during recording, and recorded levels in the playback mode. For easy reading the highest input of each channel is held for about 4 seconds on the scale, except when a higher peak occurs before 4 seconds have passed, in which case that peak is immediately indicated.

#### **®** Dolby NR indicator

The selected Dolby NR B or C type is indicated here.

#### Audio level display

The attenuated level set by the REC LEVEL buttons, LINE OUT/PHONE button, or BALANCE button is indicated here.

 When the REC LEVEL button is pressed, the display shows the recording level (REC LEVEL).

When the + REC LEVEL button is pressed, the display will count down to (maximum recording level). When the - button is pressed, the display will count up to (infinitesimal level).

• When the LINE OUT/PHONE button is pressed, the display shows the output level of the LINE OUT jacks or the headphone level (LINE OUT/PHONE).

When the + side of the button is pressed, the display will count down to (rated output level). When the - side is pressed, the display will count up to (the minimum output level) in 2 dB steps.

•When the BALANCE or REC LEVEL button is released, the display will automatically revert to the LINE OUT/PHONE level indicator, or the REC LEVEL indicator if the ● button is engaged.

#### **49 DIGITAL LEVEL MONITOR**

Indicates the input level exceeding the proper recording level for each type of tape, in 1.dB steps. When the input level is lower than the proper level, the display remains

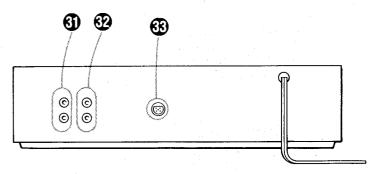
# MEMORY indicator

When the MEMORY button is pressed, this indicator shows that the memory counter function is engaged.

#### **MAUTO ATT (automatic attenuator) indicator**

When the AUTO ATTENUATOR button is pressed, this indicator appears to indicate the automatic attenuator is engaged.

#### Rear panel



#### 1 LINE IN (line inputs) jacks (phono jack)

Accepts tape outputs from an amplifier for tape recording and line outputs from another tape deck when duplicating a tape from that unit.

# **PLINE OUT (line outputs) jacks** (phono jack)

Accepts tape inputs from an amplifier for playing back a tape and line inputs from another tape deck for duplicating a tape onto that unit.

### **® REMOTE** control connector

Connect the optional RM-70 remote control unit to operate the tape transport functions from a distance. The tape deck function buttons are still operative when the remote control unit is connected. Read the instruction manual of your remote control unit before operating.

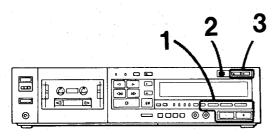
# RECORDING AND PLAYBACK USING THE AUDIO MEMORY

This cassette deck can memorize and retrieve recording and playback settings. Two different settings can be memorized for each of the four types of tape (a total of 8 settings), on the A and B AUDIO MEMORY buttons.

Once a setting has been memorized, you can retrieve it only by pressing the same button.

The recording level, recording level balance, line out/headphone level, Dolby NR system and automatic attenuator ON/OFF settings can be memorized.

#### TO MEMORIZE THE SETTINGS



- 1 Adjust the settings to be memorized.
- 2 Press the WRITE button.

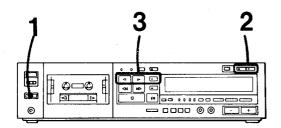
The indicators on both A and B AUDIO MEMORY buttons blink.

3 While the indicators are blinking (about 3 seconds), press either the A or B button on which you want to memorize the settings. The indicator of the pressed button will light steadily to indicate the settings have been memorized.

Repeat the same steps to memorize other settings for the same type of tape on the other AUDIO MEMORY button, and settings for the other types of tape.

Once the settings are memorized, they cannot be cancelled until new settings for the same type of tape are memorized on the same AUDIO MEMORY button. We recommend that you label the cassette according to the AUDIO MEMORY button used.

#### TO RECORD OR PLAY BACK USING THE AUDIO MEMORY



- 1 Press the **\Delta** button and insert a cassette.
- 2 Press the A or B AUDIO MEMORY button. The settings for the type of tape inserted will be recalled.
- 3 Start recording or playback.

When the cassette is changed to one with a different type of tape or when the AUTO/III button is pressed while the indicator of the A or B AUDIO MEMORY button is illuminated, the settings of the button will be recalled for the type of new cassette.

#### TO CHANGE SOME OF THE SETTINGS ON A BUTTON

Simply change the settings as you want. The original settings memorized can be recalled later simply by pressing the AUDIO MEMORY button again.

If you change the recalled settings, the indicator on the AUDIO MEMORY button goes off.

#### Note on the memory back-up circuit

The settings memorized on the AUDIO MEMORY buttons and the figures of the tape counter will not be cancelled even when the power is turned off, because of a built-in memory back-up battery. When the power is turned on again, the memorized settings which there were just before the power was turned off will be recalled. If the memory back-up battery is exhausted after prolonged use, the memory contents will be cancelled. Set the controls as required before recording or playback. The battery can be replaced by your Sony dealer.

**Note:** Even if the battery is exhausted, the other operations of the cassette deck can be activated normally.

# **DIGITAL LINEAR COUNTER**

The first two digits of this tape counter show the approximate recording or playback time in minutes, and the last two digits show the seconds. The figures increase as the tape runs to the right, and decrease as the tape runs to the left, shown with a minus sign if they go beyond 0.00.

The figures on the tape counter and the memory counter function are memorized while the power is turned off.

#### TO INDEX THE WHOLE TAPE

#### Before recording or playback, press RESET.

The counter shows 0.00.

As the tape runs, the figures of the counter change. Note the numbers and the program being recorded or played back. Any point of the tape can be easily located later by reference to these numbers.

#### TO CHECK THE AVAILABLE RECORDING TIME ON ONE SIDE

1 At the beginning of the tape, press RESET.

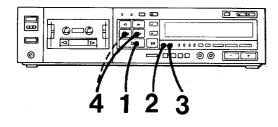
The counter shows 0.00.

2 Press ▶▶ or ◄◄.

The tape advances rapidly to the end.

At the end of the tape, the digits will show the approximate available recording time.

#### TO CHECK THE REMAINING RECORDING TIME



1 Press E.

The tape stops at the point at which you wish to begin recording.

2 Press RESET.

The counter shows 0.00.

3 Press MEMORY.

The memory counter activates. (The MEMORY indicator appears.)

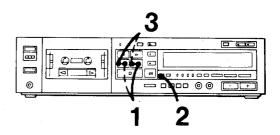
4 Press ➤➤ or ◄◄ to advance the tape.

The tape advances rapidly to the end. As the tape is moving, the digits will show the approximate recording time that remains.

### Press **◄** or **▶** to rewind the tape.

The tape will stop at 0.00.

# TO MONITOR THE REMAINING TIME WHILE RECORDING



- 1 Press ▶ or ◀ to advance the tape rapidly to the end.
- 2 Press RESET.

The counter shows 0.00.

#### Start recording.

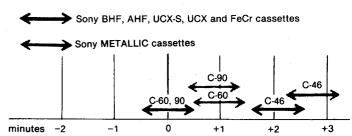
The digits will change as the recording goes on, and you can monitor the remaining recording time at any point on the tape. The function memory facilitates this tape operation. See page 14.

#### THE ACCURACY OF THE COUNTER

This counter is not actually a digital clock, so that the displayed figures are not exactly equal to the actual elapsed time. The accuracy will vary depending on the type of tape being used.

This counter has been designed using Sony C-60 cassettes as the standard. Make sure that the displayed time is greater than the time required when using a Sony C-46 cassette.

# Difference between the counter indication and actual running time on one side of a cassette



The counter indication is less than the actual tape running time.

The counter indication is more than the actual tape running time.

#### THE RECORDING PRE-END WINKER

When the tape approaches the end during recording on either side of the cassette, the digits of the counter will blink, warning that the tape is about to run out. The blinking will begin 2 to 3 minutes before the end of the tape for a Sony C-46 or C-60 cassette, and 3 to 5 minutes before the end of the tape for a Sony C-90 cassette. Note that the pre-end winker may not function when using a cassette whose hubs are very thick.

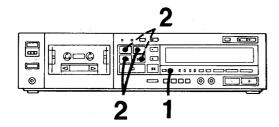
In the illustrations,

—shows the operation for the front side recording or playback.

---shows the operation for the reverse side.

# **AUTO PLAY AND MEMORY STOP/PLAY**

### AUTO PLAY — To play from the beginning of the tape



- 1 Make sure that the MEMORY indicator is not displayed.
  (If it is displayed, press the MEMORY button.)
- 2 Rewind the tape.

To play back the front side, while keeping ◀◀ pressed, press ►.

To play back the reverse side, while keeping ►► pressed, press
◄.

After the tape is completely rewound, the tape will automatically replay.

# Why does the tape stop around -0.01?

-In order to avoid cutting off the starting point.

#### How does one rewind the tape further than 0.00?

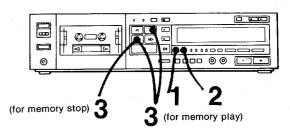
-Press the ◀◀ or ▶▶ button again.

#### When should one press the MEMORY button?

—Any time. If the MEMORY indicator is displayed, the tape will stop or replay automatically at the 0.00 point.

MEMORY STOP —To rewind the tape to the desired point

MEMORY PLAY —To rewind the tape and play from the desired point



1 Play back or record, and press RESET.

The counter shows 0.00.

2 Press MEMORY.

The memory counter activates and the MEMORY indicator appears.

3 After playback or recording,

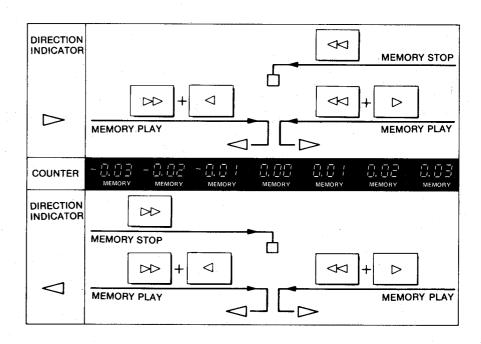
For memory stop, press ◄◄.

The tape rewinds and stops at 0.00 automatically.

For memory play, while holding ◄◄ down, press ▶.

The tape will replay automatically after rewinding to 0.00.

- You can operate the "memory stop" and "memory play" functions during playback of the reverse side of the cassette. Press the ▶▶ button for memory stop, and the ▶▶ and ◀ buttons for memory play.
- The memory play function can operate even if the DIRECTION indicator does not correspond to the direction of the tape to be played back.
- The AMS and the music scan functions have priority over the auto play function. When using the auto play function, make sure that none of the indicators of the AMS/BLANK SKIP or the MUSIC SCAN buttons lights.



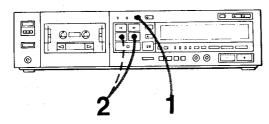
# **VARIOUS TAPE OPERATIONS**

# AMS (AUTOMATIC MUSIC SENSOR)

—To play from the beginning of the following selection or the selection being played

During playback, use the AMS to locate the beginning of the selection being played or the following selection. The AMS searches either forward or in reverse for the blank space between selections. Playback will begin automatically from the beginning of the selection.

#### To play from the beginning of the following selection



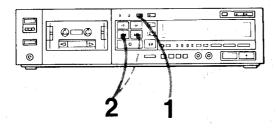
- 1 Press TAPE OPERATION to illuminate the AMS/BLANK SKIP indicator.
- 2 During playback of the front side of the cassette (when the ▷ indicator lights), press ▶▶.

The indicator of the ▶ button will blink rapidly.

During playback of the reverse side (when ⊲ lights), press ◄ .

The indicator of the ■ button will blink rapidly.

#### To play from the beginning of the selection being played



- 1 Press TAPE OPERATION to illuminate the AMS/BLANK SKIP indicator.
- 2 During playback of the front side of the cassette (when ▷ lights), press ◄

The indicator of the ▶ button will blinks rapidly.

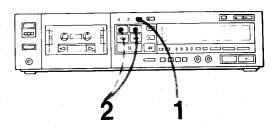
During playback of the reverse side (when ⊲ lights), press ▶▶. The indicator of the ◀ button blinks rapidly.

If you operate the AMS at a blank space between selections, playback may begin from the beginning of the selection after the following one or from the beginning of the previous selection.

#### Notes

- ●When using the AMS function, make sure that the MEMORY indication is not displayed since the counter memory function has priority over the AMS function. If it is displayed, press the MEMORY button.
- The AMS cannot search for a selection on the other side of the cassette, even if such tape movement is selected by the DIRECTION MODE button.

# BLANK SKIP — To play skipping blank spaces



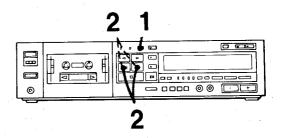
- 1 Press TAPE OPERATION to illuminate the AMS/BLANK SKIP indicator.
- 2 Start playback.

Where there is a blank about 10 seconds long, the cassette deck will automatically go into the fast-forward mode and will resume playback when a new selection begins.

#### Note

When the tape reaches the end in fast-forward mode, the head reverses and the fast-forward mode will continue until a new selection begins on the other side, if such tape movement is selected by the DIRECTION MODE button.

MUSIC SCAN —To play only the beginnings of all selections in sequence



- 1 Press TAPE OPERATION twice to illuminate the MUSIC SCAN indicator.
- 2 To locate the beginnings of the selections during playback of the front side of the cassette (when the ▷ indicator lights)

For the selections ahead, press ▶►.

For the previous selections, press --

To locate the beginnings of the selections during playback of the reverse side of the cassette (when ⊲ lights)

For the selections ahead, press ----.

For the previous selections, press --

The deck skips the selection being played in the fast-forward or rewind mode, plays the beginning of the following selection for about 10 seconds, then goes into the fast-forward or rewind mode again. This cycle will be repeated for each selection.

During fast-forward or rewind, the indicator of the ▶ or ◀ button blinks rapidly.

During playback, the indicator of the  $\blacktriangleright$  or  $\blacktriangleleft$  button blinks slowly. If the  $\blacktriangleright$  or  $\blacktriangleleft$  button is pressed during playback, the music scan function will be cancelled and normal playback will resume. The indicator of the  $\blacktriangleright$  or  $\blacktriangleleft$  button will light steadily.

#### Note

The unit will automatically shut off at the beginning or end of the side of the cassette on which the music scan started, even if one-cycle play or five-cycle play is selected by the DIRECTION MODE button.

#### Notes on the AMS, blank skip and music scan functions

• A low-frequency monotone signal may have been recorded for 2 seconds or so at the beginning and at the end of some commercially available recorded cassettes. If the blank skip function is used with such a cassette, it may malfunction and repeat the last selection on the tape over and over again.

If this happens, erase the monotone signal or press the TAPE OPERATION button so that neither the AMS/BLANK SKIP or MUSIC SCAN indicator illuminates.

• If there is noise in the space between selections, or if the space is less than 4 seconds long, the AMS or the music scan may not operate.

The record muting facility of this cassette deck can make a 4-second blank space that will assure correct operation on any recorded tape.

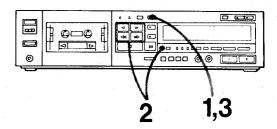
- If the recorded music includes a long pause, if it continues for a time at such low frequencies as those of a bass saxophone or at very low volume, or if its volume increases or decreases gradually, as may happen with classical music, the AMS, music scan or blank skip will treat these passages as blanks and playback will begin in the middle of a selection. If this happens, press the ▶▶ or ◄◄ button.
- If the ▶ or ◄ button is pressed immediately before the following selection, the AMS, blank skip or music scan may skip the selection and search for the selection after the one immediately following.

# **FUNCTION MEMORY**

Up to 8 steps of tape operations controlled by the  $\triangleright$ ,  $\triangleleft$ ,  $\triangleright \triangleright$ ,  $\triangleleft \triangleleft$  and RESET buttons can be set on the FUNCTION MEMORY button and can be executed in the memorized sequence automatically simply by pressing one button.

Examples of the operations to be memorized

- button → ◀◀ button
  - (to wind the tape uniformly)
- ② ▶ button → ◀◀ button → ▶ button
  - (to repeat playback of the front side of the cassette)



- 1 Stop the tape, and press FUNCTION MEMORY.
  - The indicator of the FUNCTION MEMORY button lights up.
- 2 Press ▶, ◄, ▶▶, ◄◄ and RESET in the order in which you want the deck to operate later.

When a button is pressed, the indicator of the FUNCTION MEMORY button blinks once to indicate the operation has been set in the memory.

3 Press FUNCTION MEMORY again.

The memorized operation starts.

During the operation, the indicator on the FUNCTION MEMORY indicator blinks slowly.

- If more than 8 buttons are pressed to be memorized, the indicator of the FUNCTION MEMORY button blinks rapidly, indicating the memory is full. No more buttons cannot be memorized.
- ●To erase the memory contents while memorizing, press the button
- To cancel the on-going memory operation, press a function button or RESET button. The indicator of the FUNCTION MEMORY button goes off.

# How to work the counter memory function when the memorized operation is being executed

- ●When the MEMORY indicator is displayed, the tape stops at the 0.00 point of the tape counter and the deck goes into the next operation memorized in the following cases.
- When the ◀◀ button is pressed with the ▷ indicator illuminated.
- When the ▶▶ button is pressed with the ⊲ indicator illuminated.
- When the MEMORY indicator is not displayed, the tape stops at the beginning or at the end, and the deck goes into the next operation memorized.

#### Notes

- While executing the memorized operations, the remote control operation, the AMS, blank skip, music scan and quick reverse functions cannot be used.
- The memorized operations have priority over the tape movement selected by the DIRECTION MODE button.
- The function memory is erased when the unit is turned off.

# **RECORD MUTING**

By pressing the O button during recording, four seconds interspacing is provided automatically, eliminating unwanted program material such as broadcasting commercials. While the record muting is operating, the incoming signal is not recorded on the tape but it continues to register on the meters and feed to the monitor so that you know exactly what is going on.

- 1 Press the O button when the segment you do not want to record begins. The indicator of the 11 button will blink. A blank is made while the tape continues to run and the tape path pauses automatically after four seconds. The indicator of the 11 button will illuminate.
- 2 When you want to resume recording, press the button. The indicator of the button will go off.

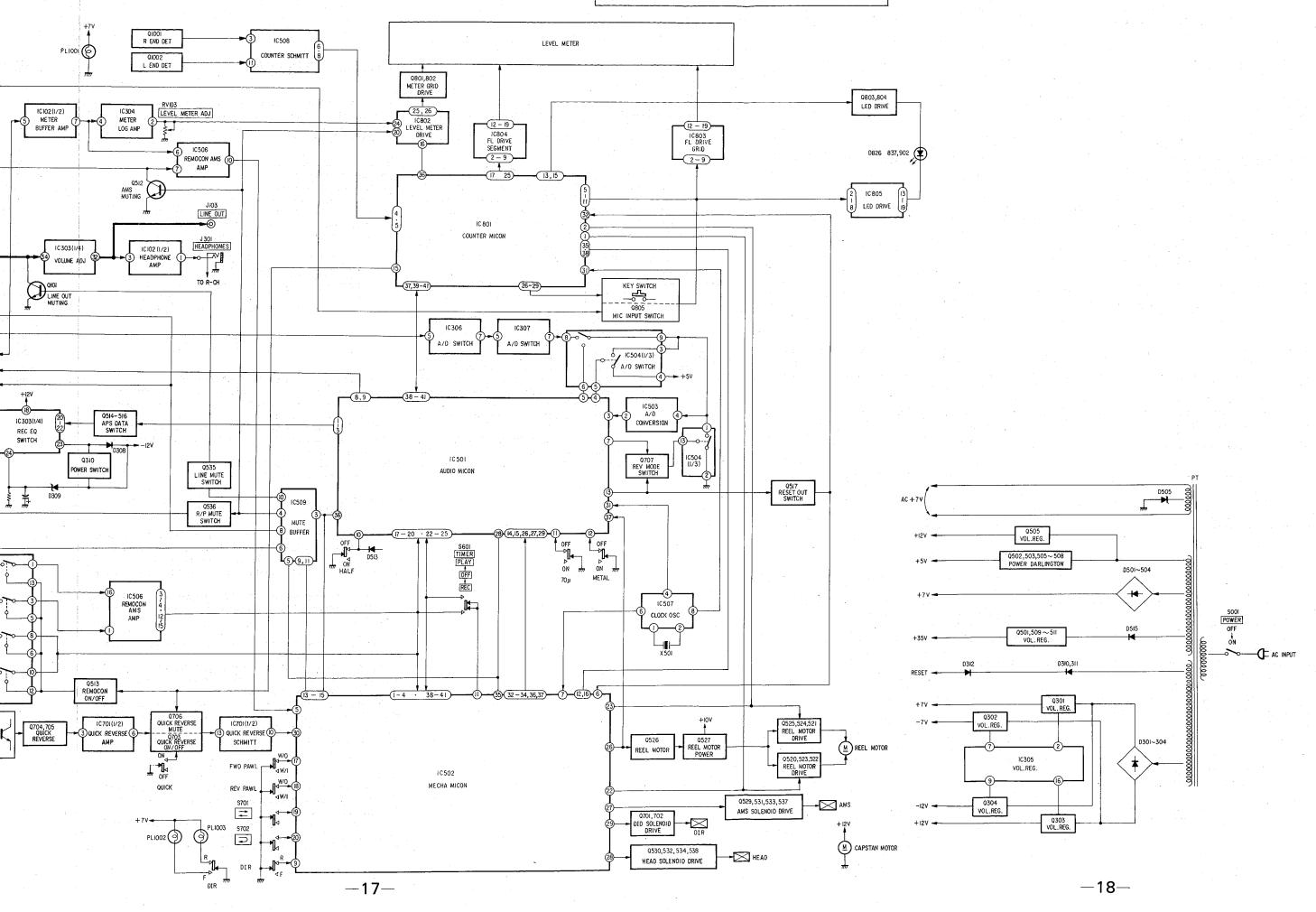
# To insert a blank less than four seconds long

Press the O button to mute recording. Press the II button when you want to resume recording.

#### To insert a blank over four seconds long

Hold down the O button for as long as you want the blank segment on the tape to be. After four seconds, the indicator of the II button will blink more rapidly. When you release the O button, the tape deck will be in the pause mode. When you want to resume recording, press the II button to release the pause mode.

# TC-FX707R TC-FX707R



# 1-2. CIRCUIT OUTLINE

TC-FX707R is a stereo cassette deck having an ASP IC CX7919 (electronic volume control). This IC controls the volume of the audio circuit and serves as switches.

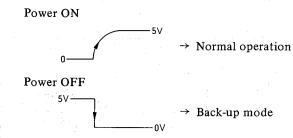
The three microcomputers are employed as mechanical controller in this set. As the data signals from each microcomputer are related with the other one, be careful to the following explanation.

#### 1. Three microcomputers

- IC501 (audio microcomputer):
   ASP control, Level A/D control, memory back-up, etc.
- IC502 (mechanical microcomputer): mechanical control, AMS, (quick reverse), etc.
- IC801 (counter microcomputer):

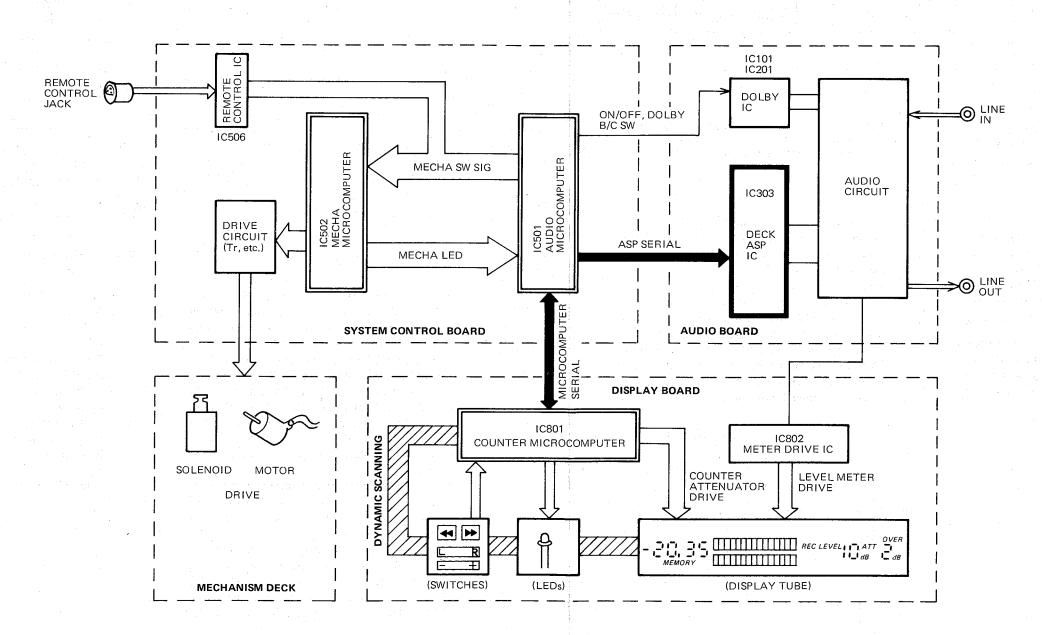
  Linear counter, switch input, dynamic scanning of display output, etc.

2. As the audio microcomputer is backed-up by lithium cell, the contents (information) of the audio memory and the value of the linear counter are not erased. Normally, reset signal is not applied to the audio microcomputer (IC501 3 is connected to cell). Either normal operation or back-up mode is determined according to the level at the HOLD terminal of IC501 3 when the power is turned on or off.

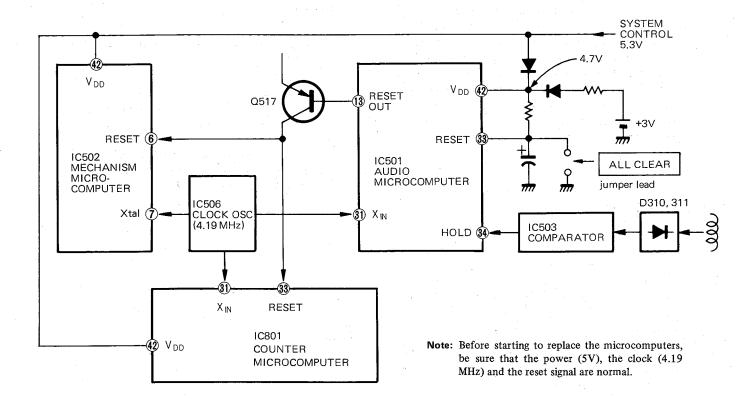


This trigger voltage is applied to IC501 34 from the power transformer via D310, D311 (rectifiers) and IC503 (comparator).

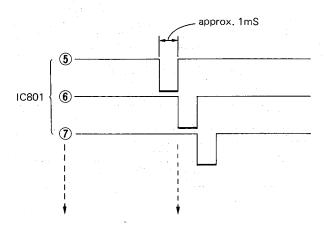
# — Block Diagram for TC-FX707R Microcomputer System —



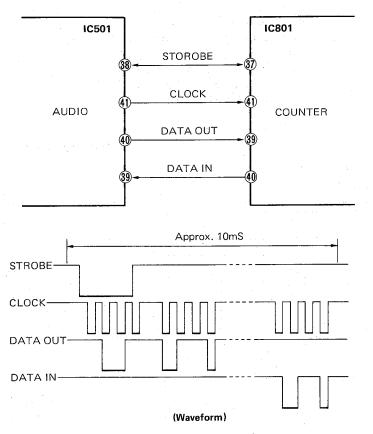
# - Simplified Circuit for Power and Reset Signal Among Three Microcomputers -



- 4. The counter microcomputer (IC801) operates dynamic scanning of the tact switch input related with all the mechanism and audio circuit and of the display output of FL tube except for the LEDs and the level meter besides common linear counter. IC801 ⑤ ⑫ outputs the scan signal of eight figures as shown below. These signals drop to "L" level in order at intervals of approx. 1mS. However, these are scanned synchronized by dividing output of the level meter IC, IC802 16 . Therefore, if IC802 is defective, the dynamic scanning is not made.

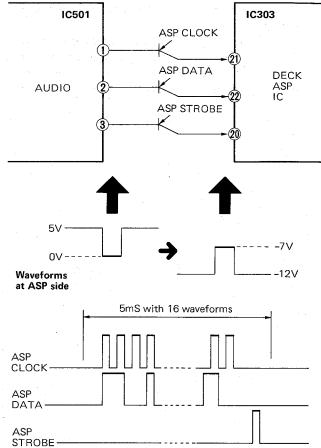


5. The switch input signal and the display output signal are transferred between IC501 and IC801 by the serial data signal manner. This outputs the data according to the clock of 4 cycles and 17 pairs when the switch is pushed or released, the LED is turned on, the input or the output condition is changed and so on (See figure below).



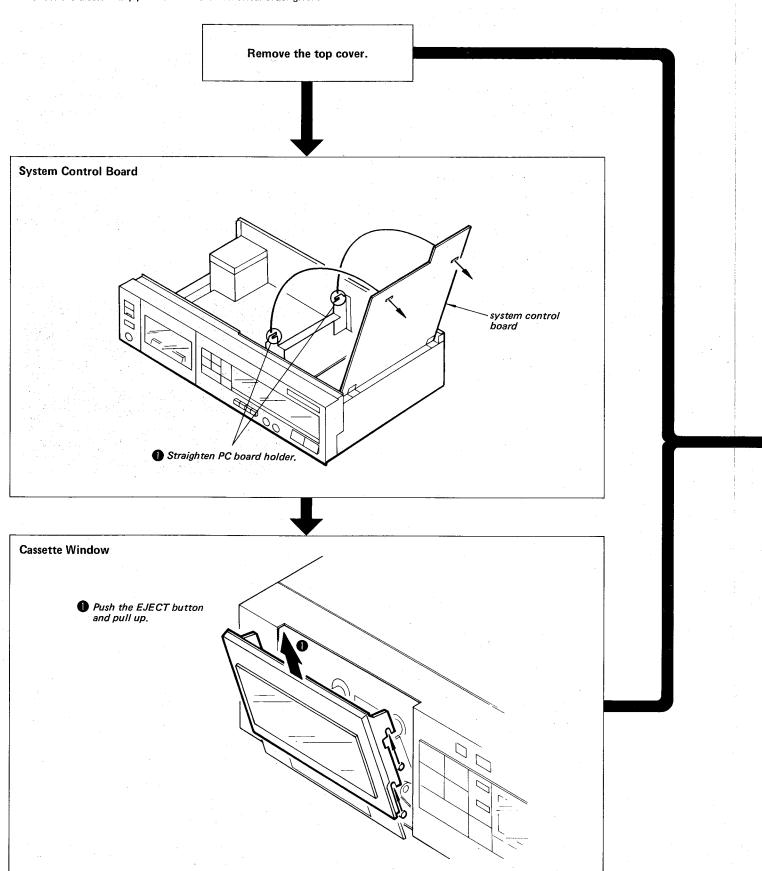
- 6. The switch inputs (for example; ▶, ◀ ◀ switches) and the display outputs (for example; ♠, lamps) of IC502 are transferred in serial operation and connected to the controls on the front panel via the IC501, which excutes serial-parallel conversion. Accordingly, if IC501 or the serial data bus is defective, the mechanism deck will not operate. As mentioned in the block diagram, the remote-control input is directly connected to IC502 via IC506. Therefore, if the mechanism is operated by using the remote control, IC502 is normal.
- 7. The configuration of this audio circuit is almost the same as that of common one. The difference between them is that the mechanical level controls and the switches are integrated in the ASP IC (IC303) as a semiconductor switch. The bias current switching depending on tape type is made by variable dc output from IC303 (9). IC303 is controlled by the ASP serial data from IC501. The ASP data are outputted when the

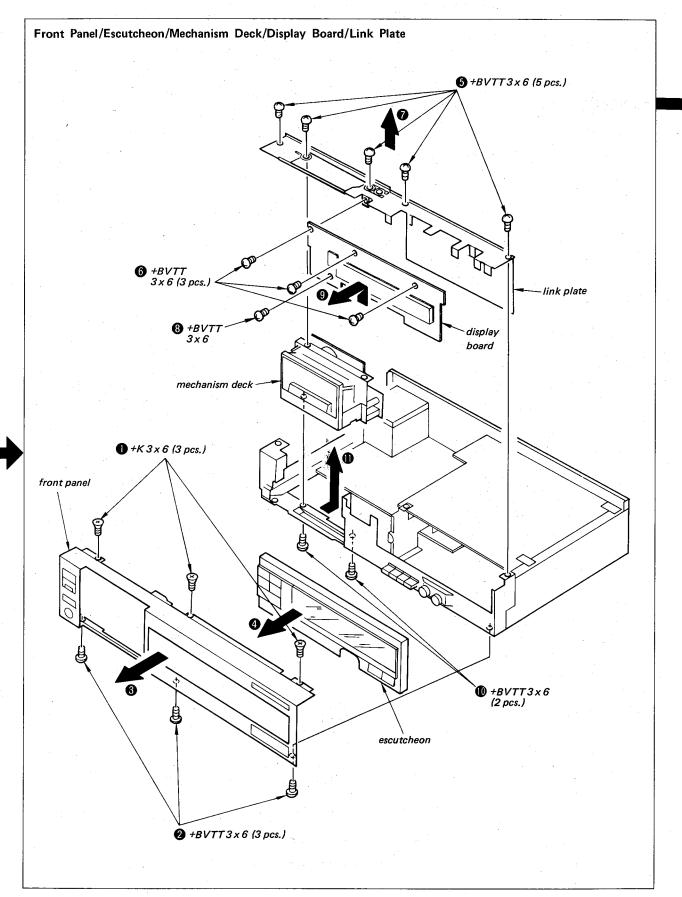
audio condition is changed (for example, when the record level or the tape type is changed) as shown below. The ASP signal is phase-inverted and level-shifted by Q514-Q516.



- 8. The recording level detection A/D converter circuit for the digital level monitor and the automatic attenuator function is controlled by IC501.
  - The recording signal passed in the A/D amplifier (IC501) is rectified, sampled by IC504 to L-CH and R-CH, and charged in C513. It is discharged by IC514.
- 9. After replacing the microcomputers or cell, be sure to initialize the microcomputers by applying the reset signal. This can be performed by shorting the "ALL CLEAR" jumper wire near the cell on the system control board with a screwdriver.

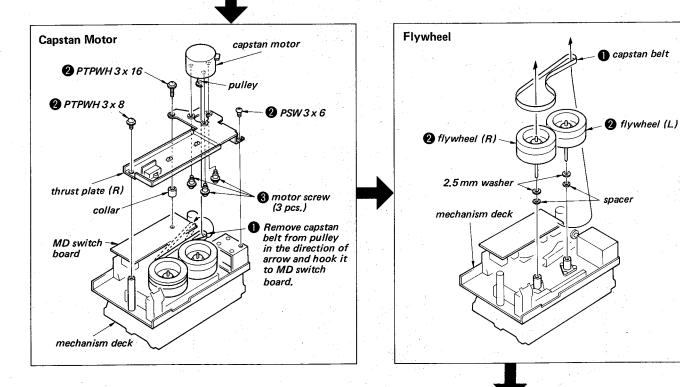
• Follow the disassembly procedure in the numerical order given.

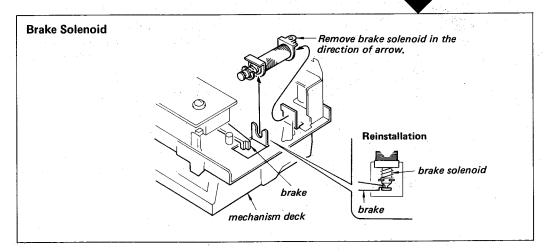




# SECTION 3 ADJUSTMENTS

# Cassette Holder (1) loading guide roller (3) loading guide roller (4) torsion spring cassette holder (5) holder fulcrum plate (B) (6) +BVTT 2.6 x 5





# 3-1. MECHANICAL ADJUSTMENTS

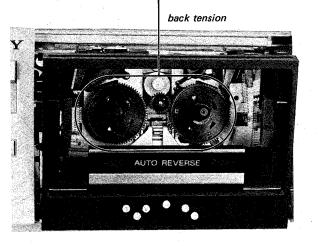
# PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:

record/playback head erase head capstan pinch roller rubber belts idlers

- 2. Demagnetize the record/playback head with a head demagnetizer.
- 3. Do not use a magnetized screwdriver for the adjustments.
- 4. After the adjustments, apply suitable locking compound to the parts adjusted.
- 5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Torque	Torque Meter	Meter Reading
FWD	CQ102C	$30 - 60 \mathrm{g} \cdot \mathrm{cm}$ (0.42 - 0.83 oz · inch)
FWD back tension	CQ102C	$3.5 - 5.5 \text{ g} \cdot \text{cm}$ (0.04 - 0.09 oz \cdot inch)
REV	CQ102RB	$30 - 0.09 \text{ g} \cdot \text{cm}$ (0.42 - 0.83 oz • inch)
REV back tension	CQ102RB	$3.5 - 5.5 \text{ g} \cdot \text{cm}$ (0.04 - 0.09 oz \cdot inch)
FF•REW	CQ201B	$110 - 175 \text{ g} \cdot \text{cm}$ (1.52 - 2.42 oz · inch)



# Precaution on Repairing

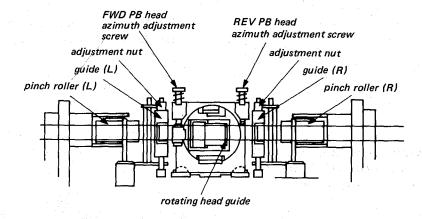
As the head center adjustment and the tape pass adjustment are affected each other, do not perform them at the same time.

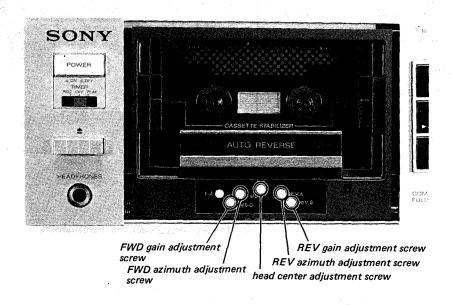
#### **Head Center Adjustment**

- 1. Insert a mirror tape cassette.
- 2. Place the unit in play mode.
- 3. When the lower part of the tape is warped, loose the head center adjustment screw. Reversely, the upper part of the tape is warped, secure the adjustment screw.
- 4. Confirm the tape warp for both in the forward and reverse directions.

# **Tape Pass Adjustment**

- Clean the pinch roller and the record/playback head with soft cloth moistened with alcohol.
- 2. Play a test tape WS-48.
- 3. Adjust the FWD gain adjustment screw in the forward mode and the REV gain adjustment screw in the reverse mode so that the VTVM reads the maximum, and lissajous figure is in 30 angle reading on the oscilloscope across the LINE OUT.
- Play a mirror tape cassette in the forward mode,
- Confirm the there is no tape curl near the guide of the head and the tape quide L.
   If there is tape curl, adjust the guide L.
   The turning amount of the guide L should be within 3/4 turns.





#### 3-2. ELECTRICAL ADJUSTMENTS

Note: The adjustment should be performed in the order given in this service manual.

The adjustments should be performed for

both L-CH and R-CH.

• Set the TAPE SELECT switch according to the tape as follows.

Tape	TAPE SELECT switch	LED display
CS-15	AUTO	I: NORM
CS-26	AUTO	II: CrO <sub>2</sub>
CS-30	Fe-Cr (METAL)	III: Fe-Cr
CS-40	AUTO Fe-Cr (METAL)	IV: METAL

• Switches and controls should be set as follows unless otherwise specified.

DOLBY NR	OFF
TAPE	.TYPE I
TIMER	OFF
REC BALANCE	Gatt (CENTER)
LINEOUT/PHONE	
LEVEL	$\mathbb{G}_{dB}^{AYT}$ (MAX)
AUTO ATT	OFF

#### • Standard Record:

Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

#### Standard Input Level

	MIC	LINE IN
source impedance	300Ω	10kΩ
input level	0.77 mV (-60 dB)	0.25 V (-10 dB)

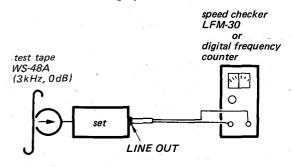
# Standard output Level

	HEADPHONES	LINE OUT
load impedance	8Ω	47kΩ
output level	31 mV (-26 dB)	0.435 V (-5 dB)

# Tape Speed Adjustment

#### Procedure:

Mode: forward playback



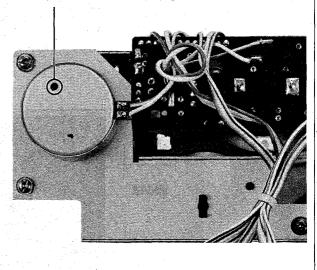
# Specification:

Speed checker	Digital frequency counter
-0.66 ~ -0.33%	2,980 – 2,990 Hz

Frequency difference between the beginning and the end of the tape should be within 0.84% (25 Hz).

# Adjustment Location:

Adjust the speed by using screwdriver. When turning the screw clockwise, speed is faster.

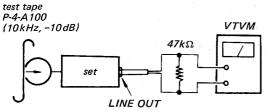


# Record/playback Head Azimuth Adjustment

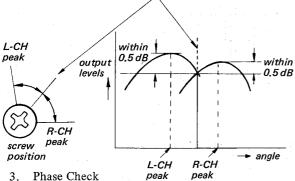
Note: (Perform for both in forward and reverse directions.)

#### Procedure:

1. Mode: playback

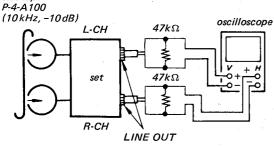


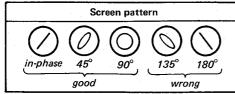
2. Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 0.5 dB.



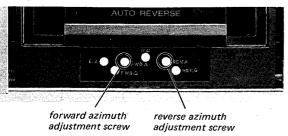
Mode: playback

test tape





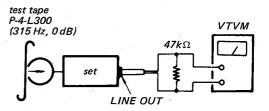
### Adjustment Location:



#### Playback Level Adjustment

#### Procedure:

Mode: playback



#### Specification:

LINE OUT level:

0.41 - 0.46 V

(-5.5 - -4.5 dB)

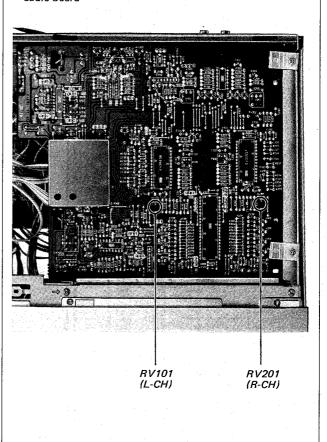
Level difference between channels:

less than 0.5 dB

Check that the LINE OUT level does not change in playback mode while changing the mode from playback to stop several times.

#### Adjustment Location:

- audio board -



# **Record Bias Adjustment**

#### Setting:

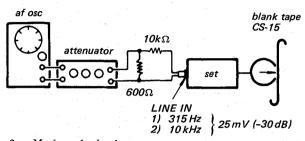
REC LEVEL control:

standard record

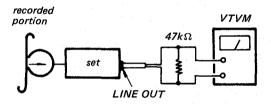
(See page 28)

#### Procedure:

1. Mode: record



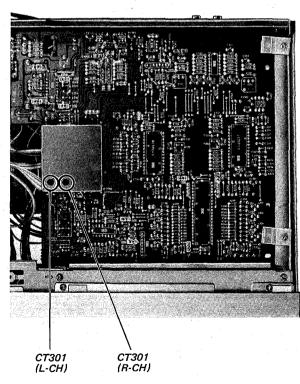
2. Mode: playback



Adjust CT301 so that the LINE OUT level of 10 kHz signal is 0 dB relative to that of 1 kHz.

#### Adjustment Location:

- audio board -



## Record Level Adjustment

#### Setting:

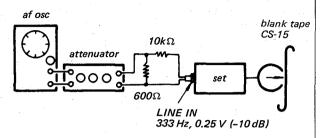
REC LEVEL control:

standard record

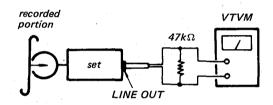
(See page 28)

#### Procedure:

1. Mode: record



2. Mode: playback



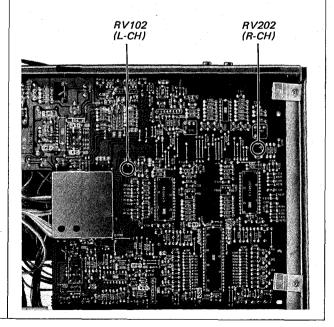
# Specification:

LINE OUT level: CS-15; 0.41 – 0.46 V

(-5.5 - -4.5 dB)CS-26; CS-30; CS-42; (-6 - -4 dB)

## Adjustment Location:

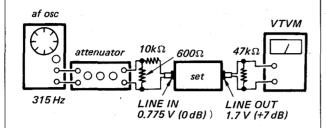
- audio board --



#### Level Meter Calibration

#### Procedure:

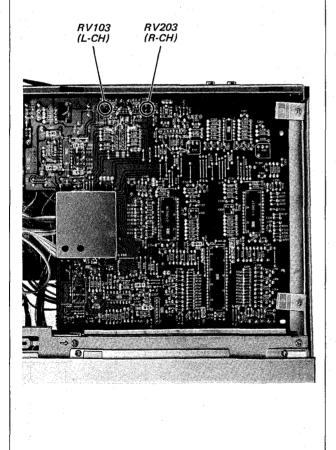
1. Mode: record

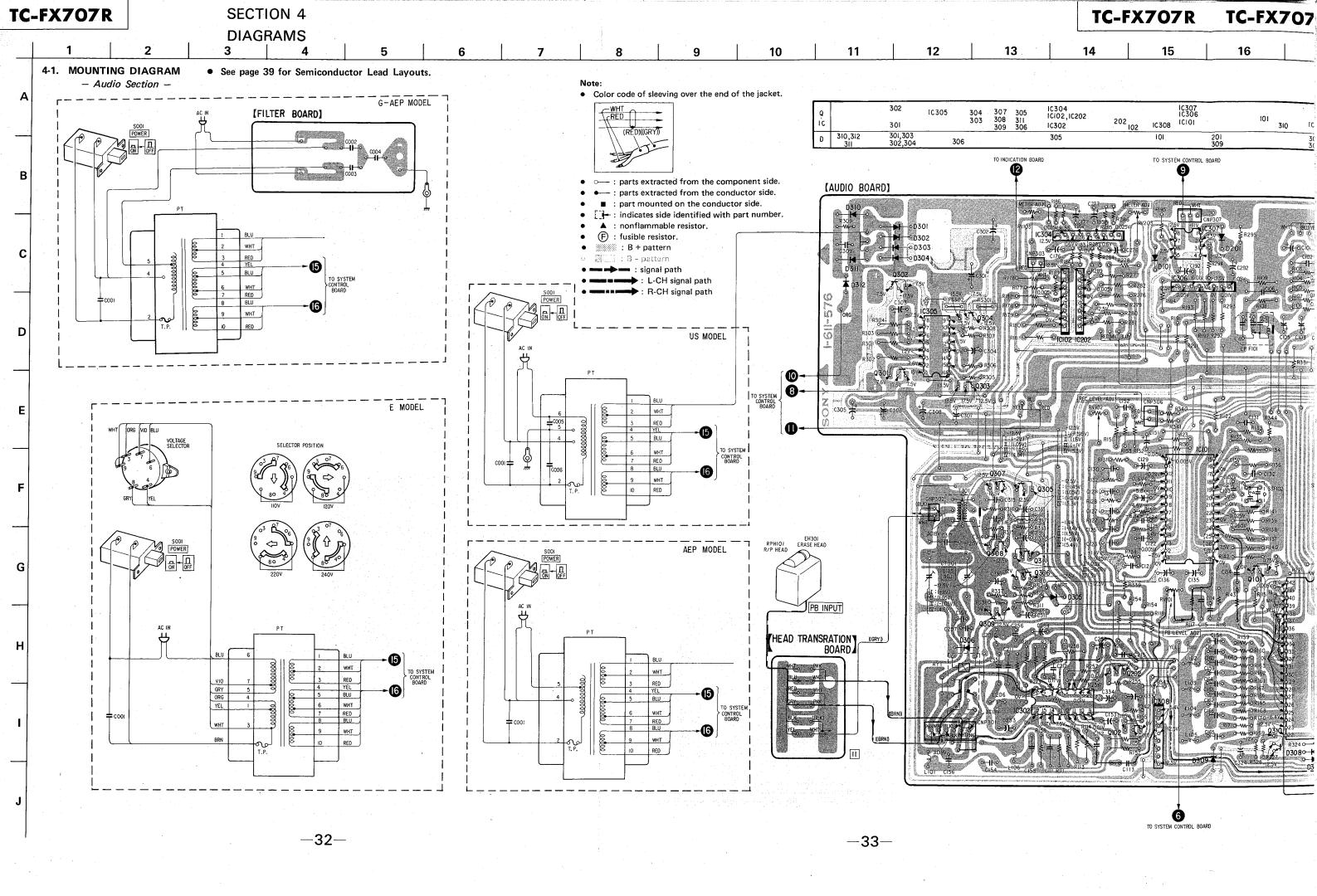


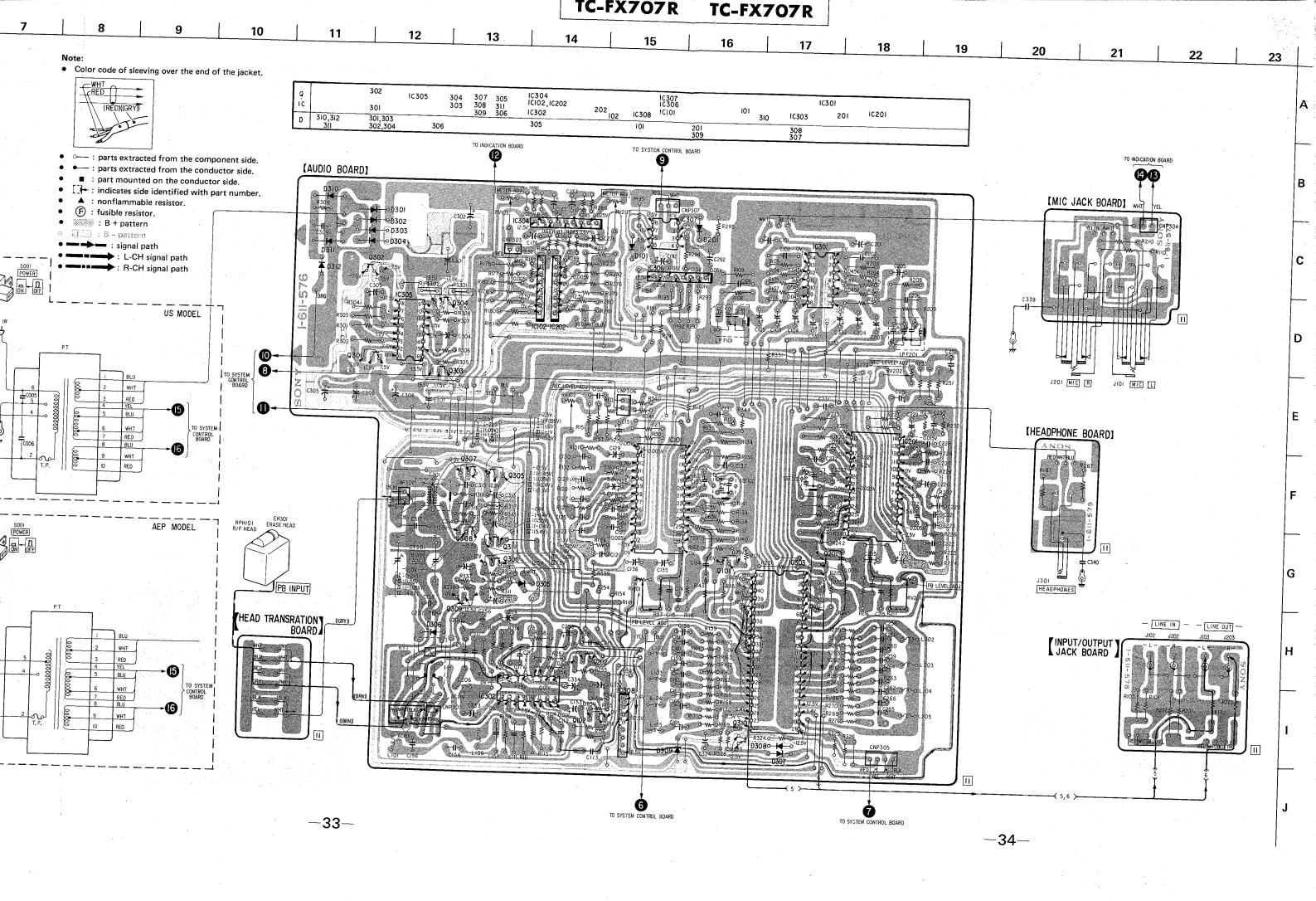
- 2. Set the REC LEVEL control so that the LINE OUT level is 1.7 V (+7 dB).
- 3. Adjust RV103 (L-CH) and RV203 (R-CH) so that all the segment of the LED meter go on.
- 4. Make sure that the LED meter indicates -4 dB (0 VU) when VTVM reads -5 dB (0.44 V).

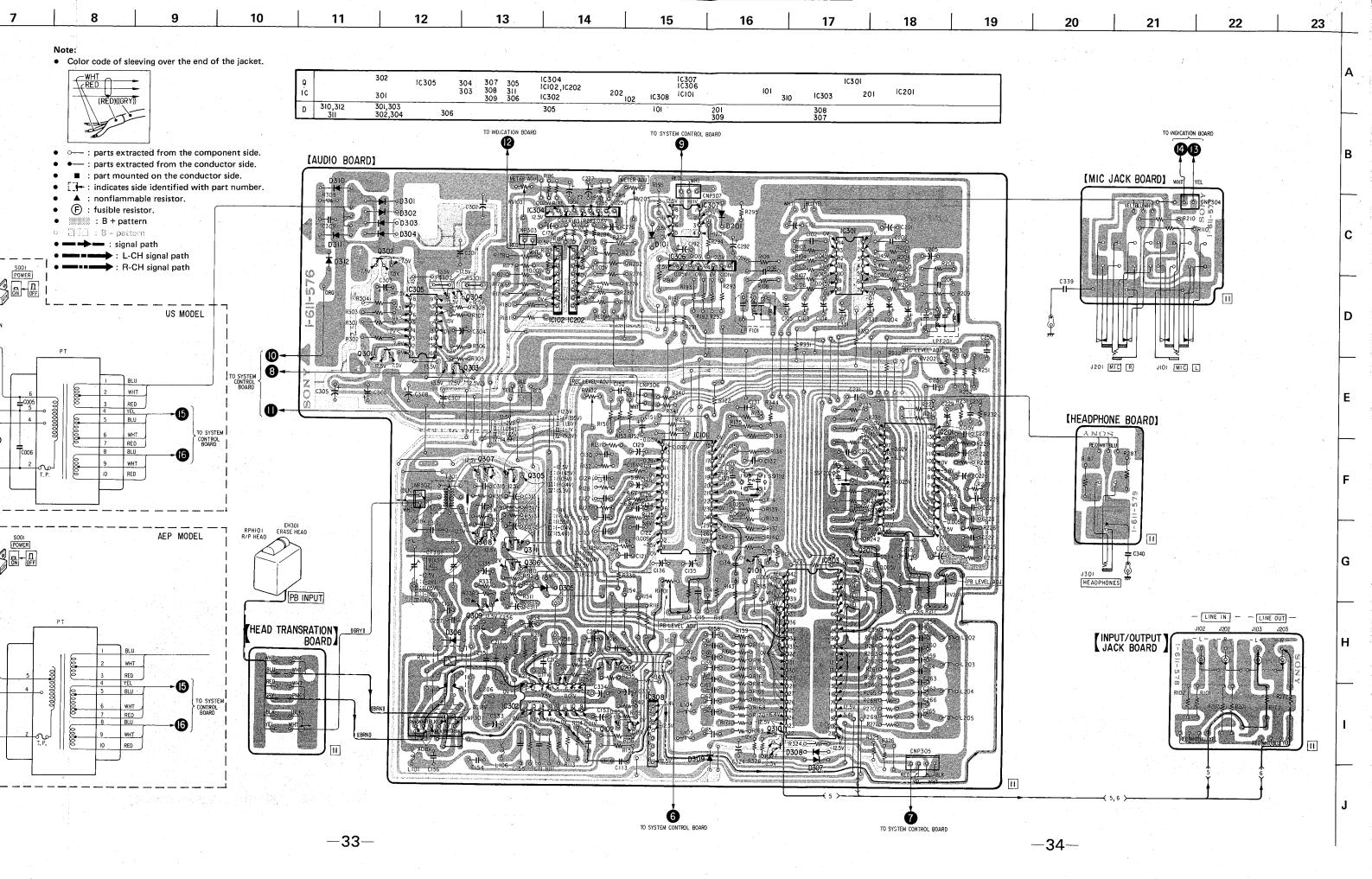
# Adjustment Location:

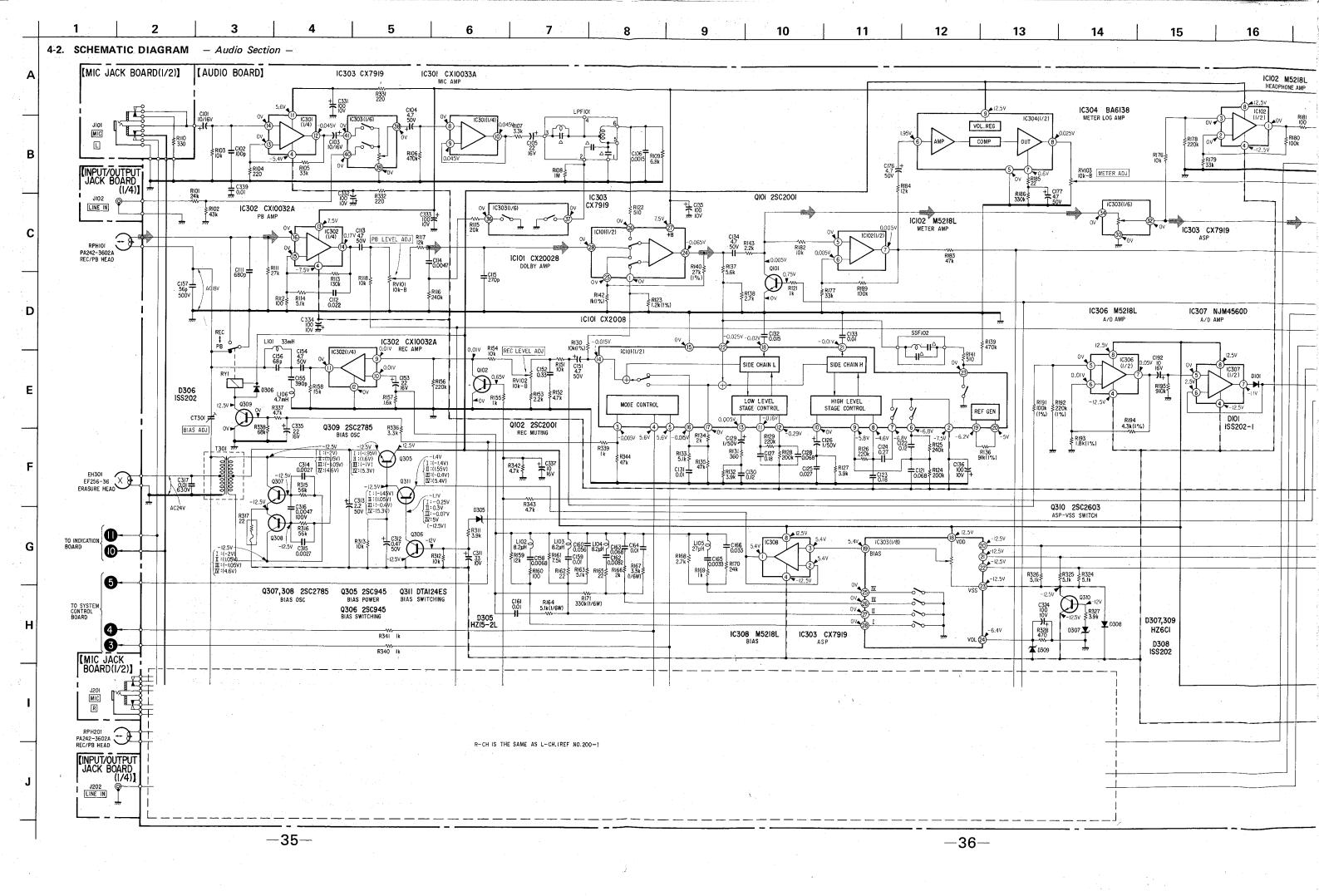
- audio board -

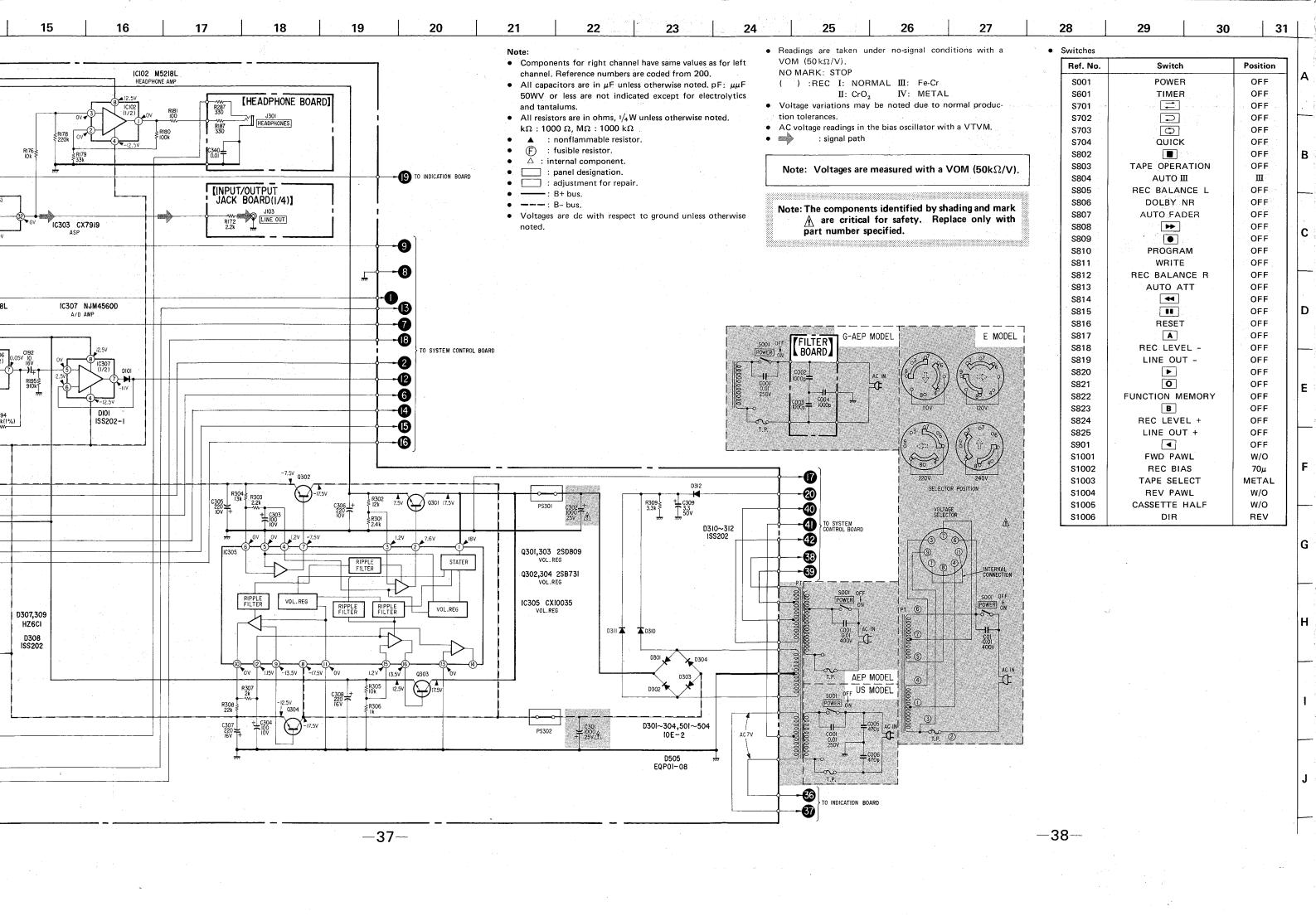


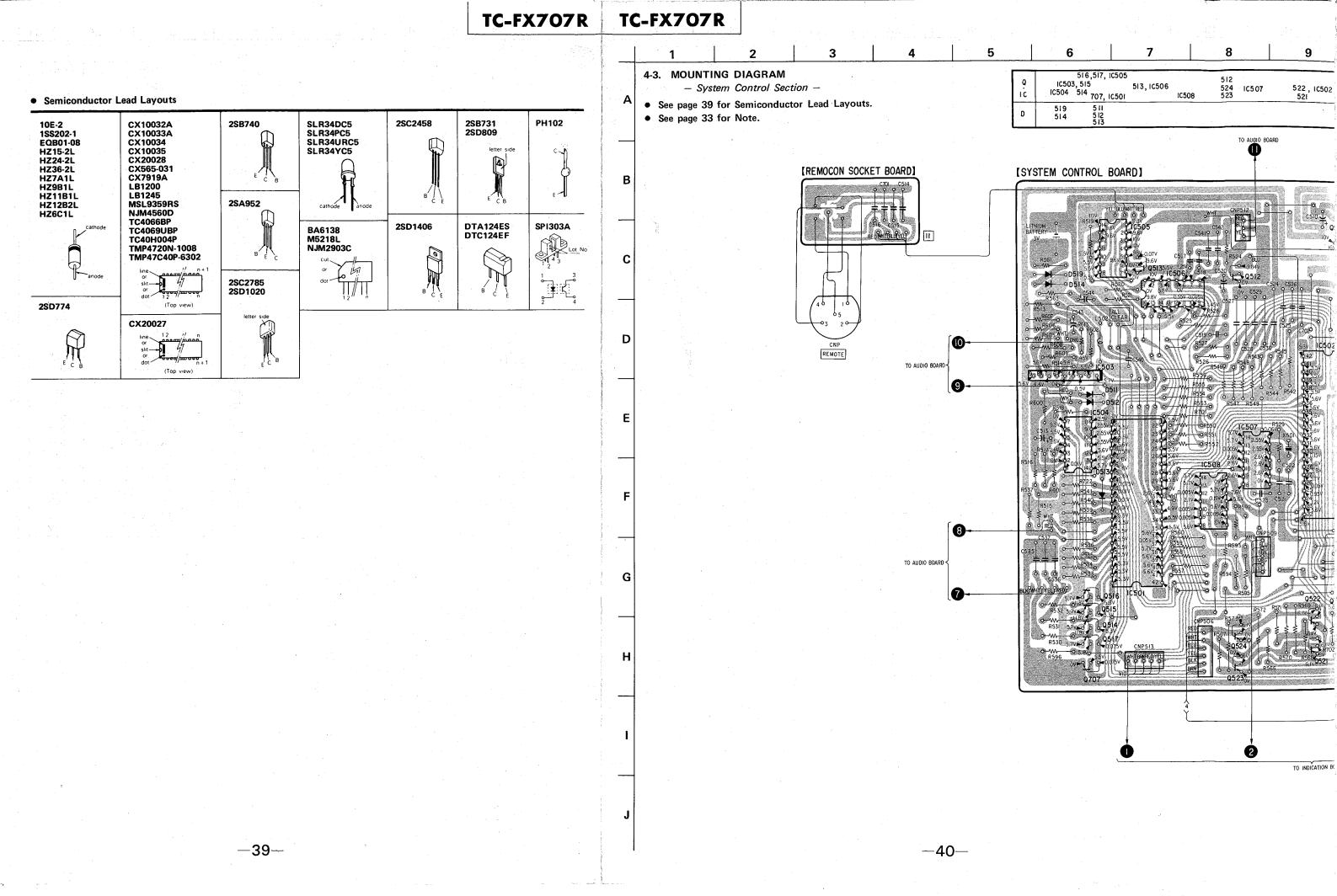


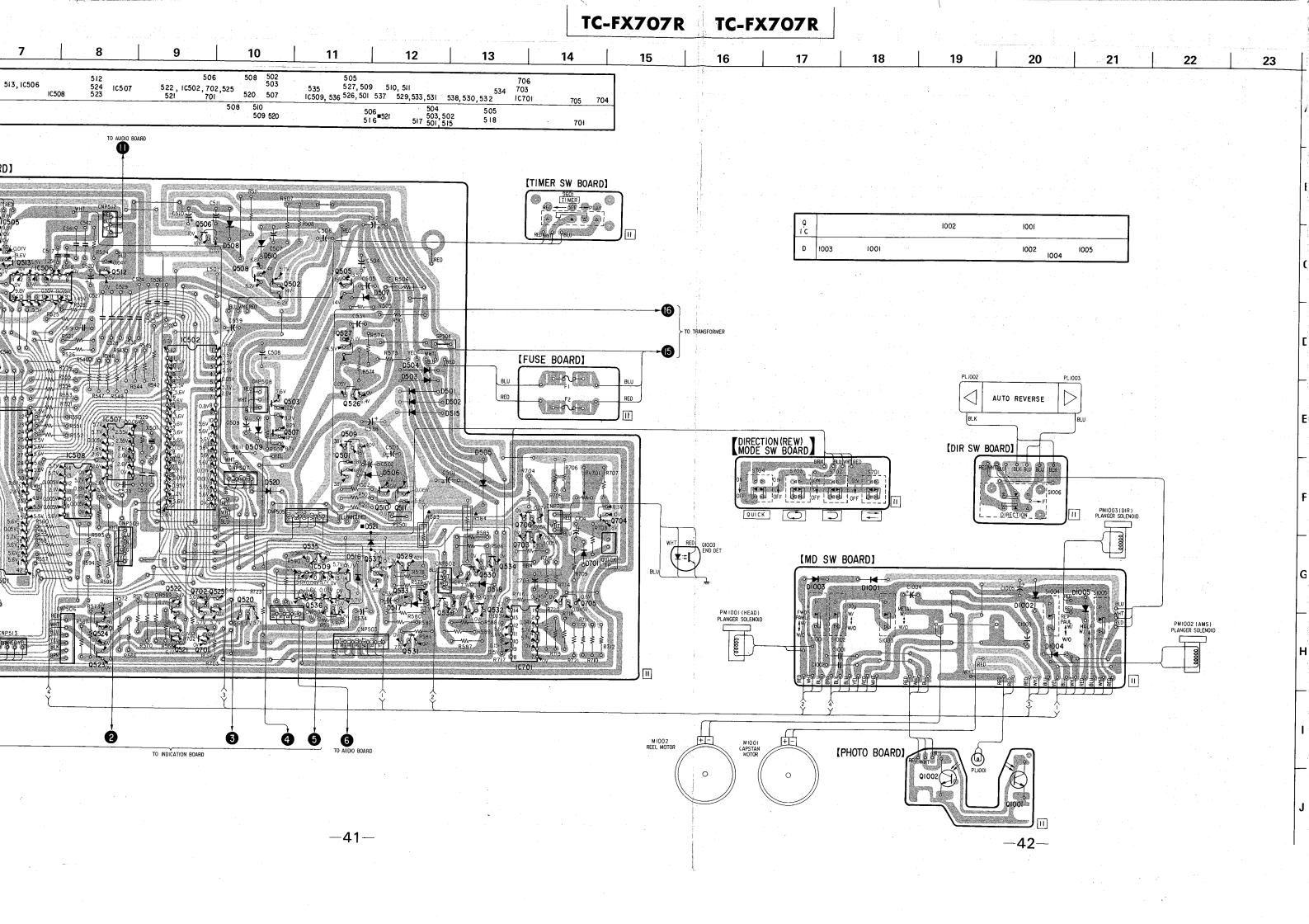


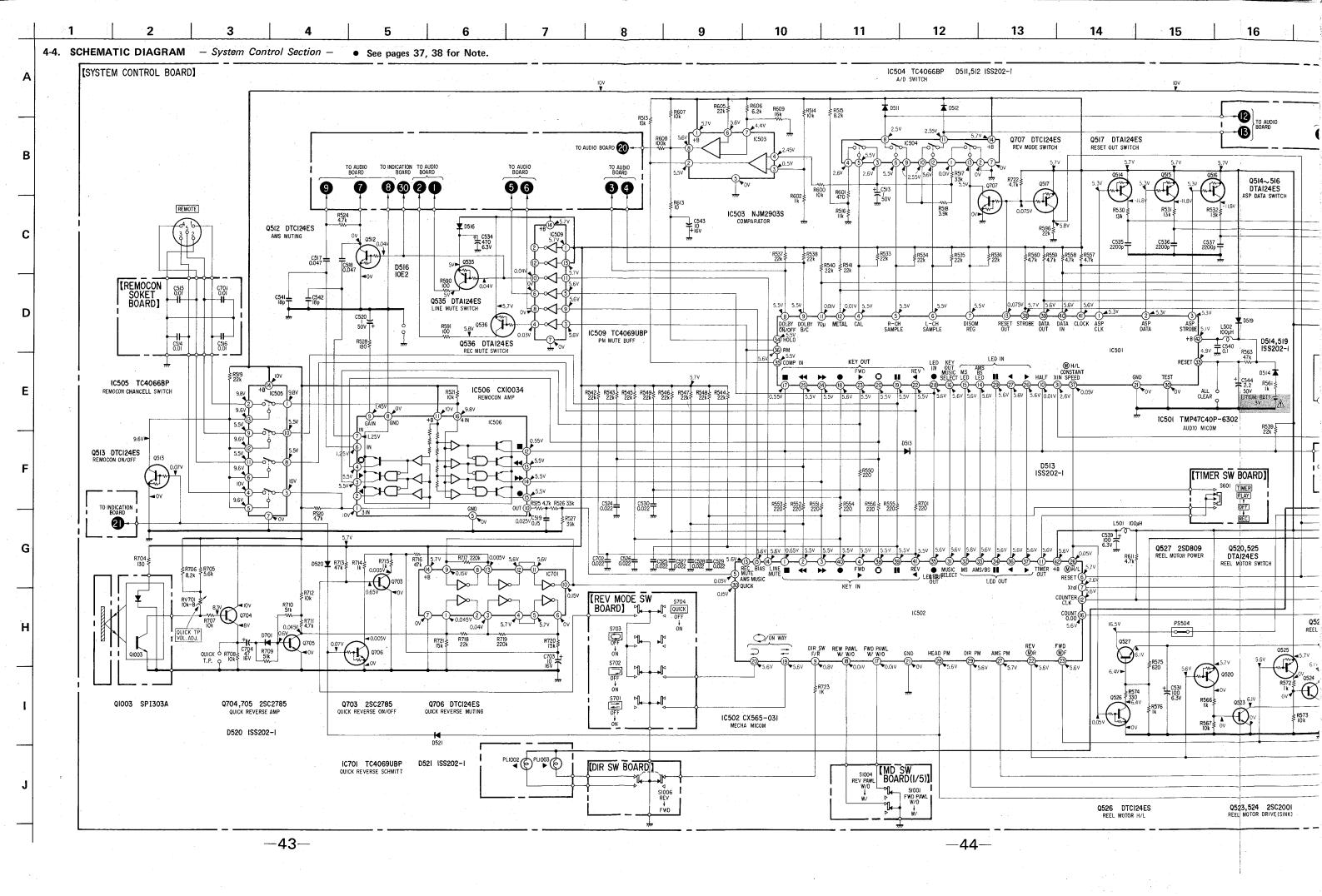


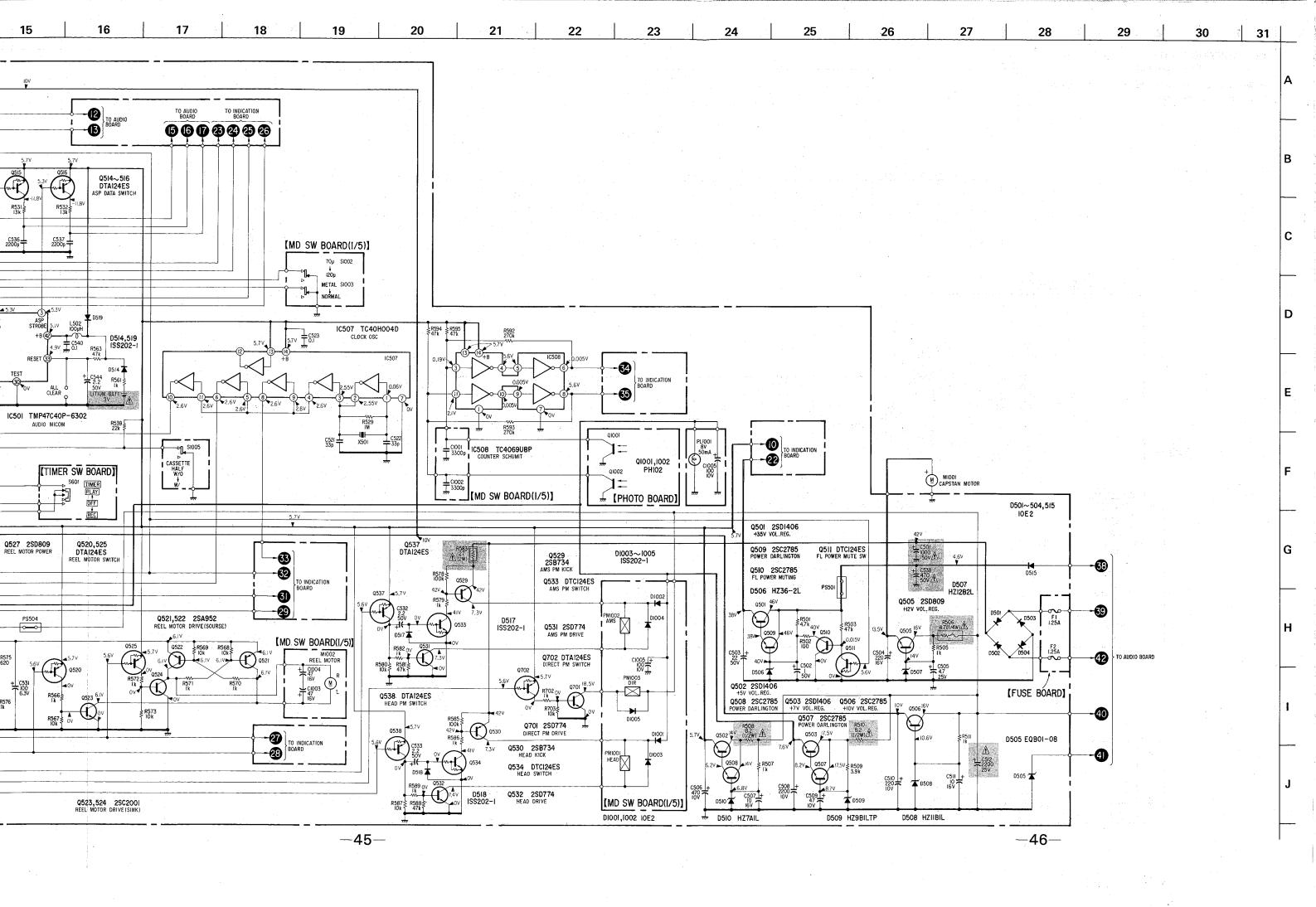


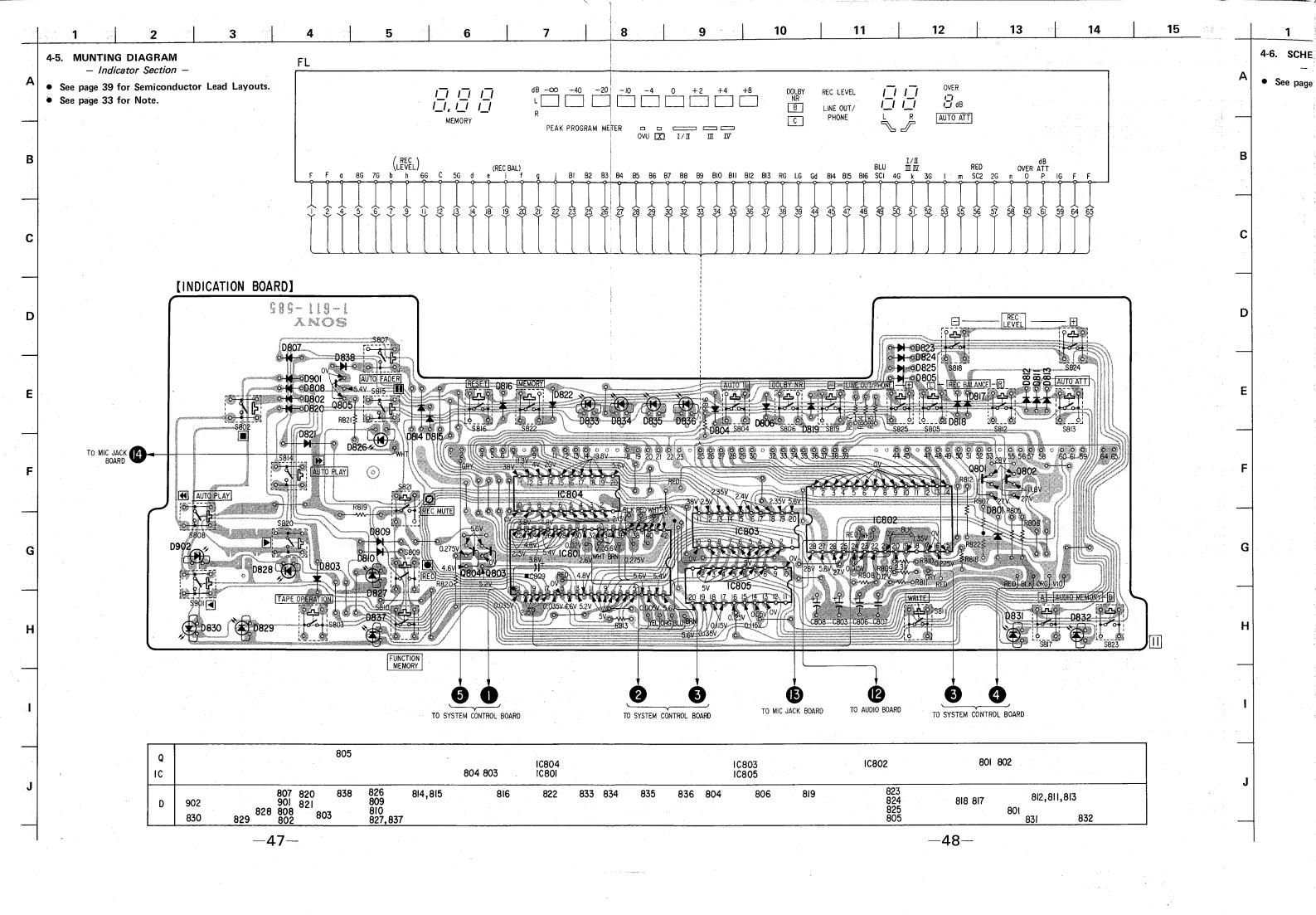


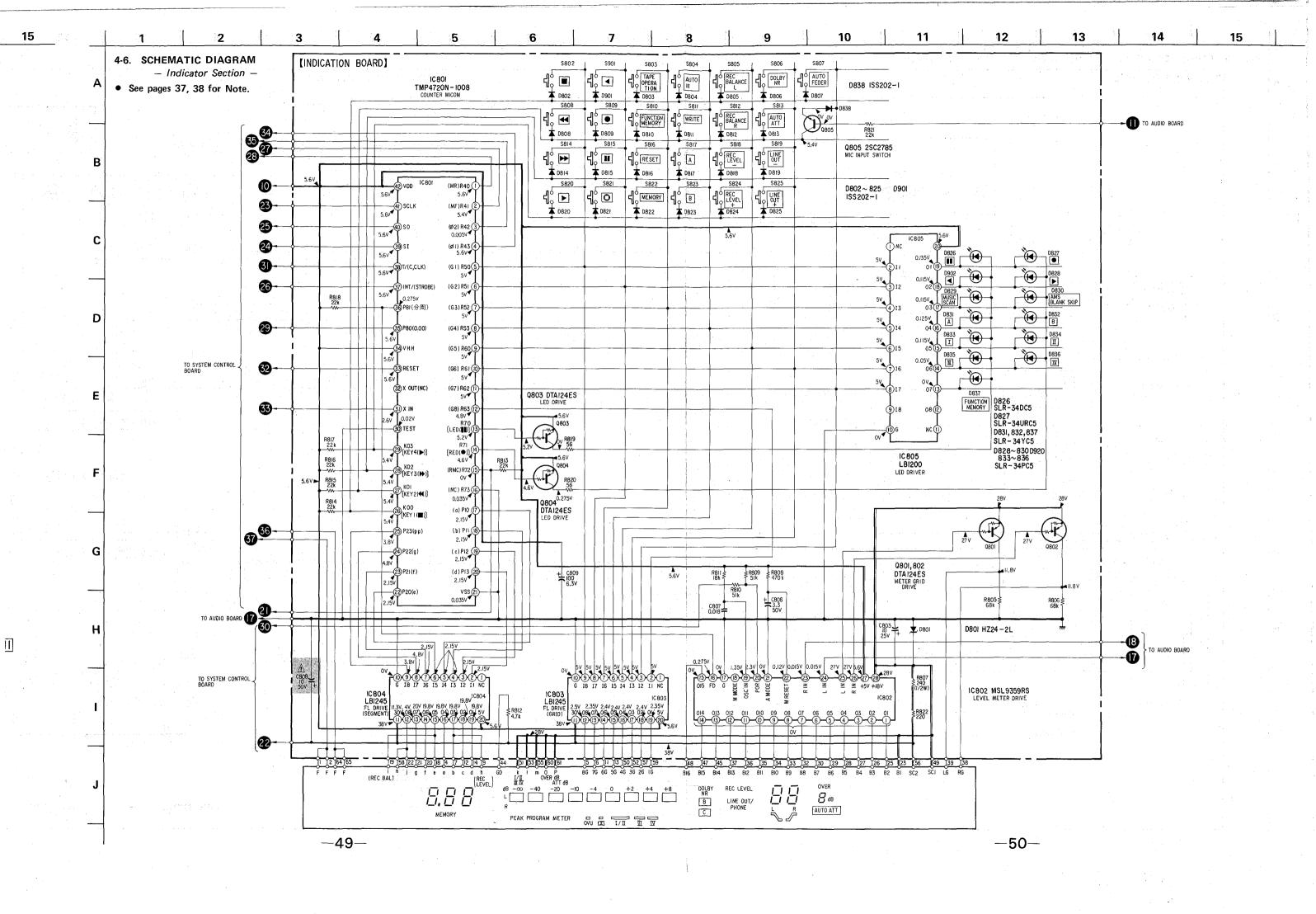




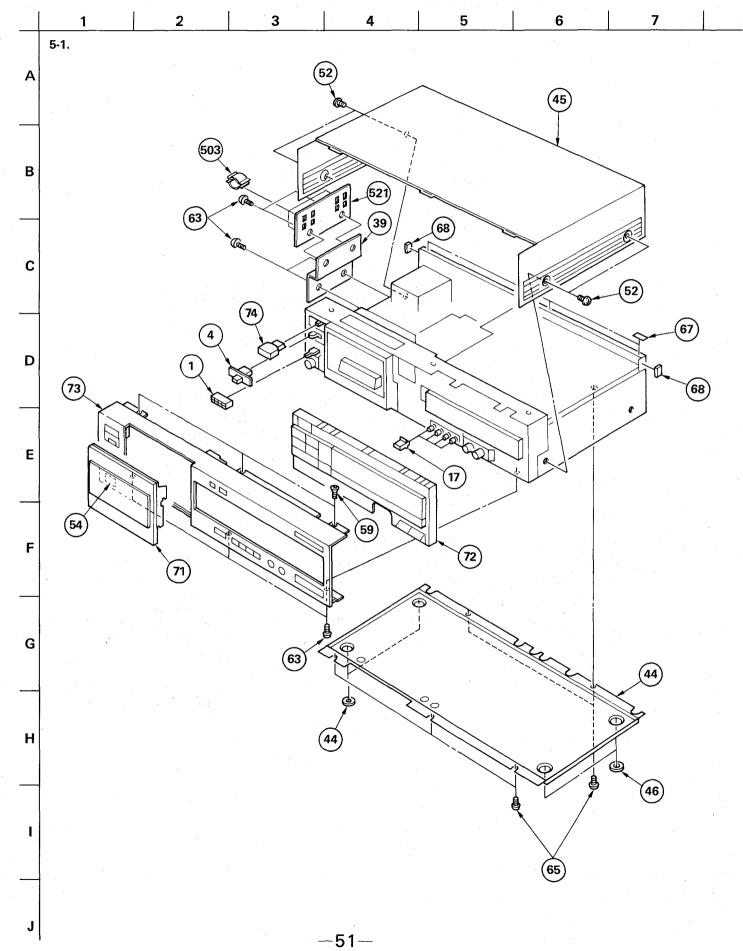


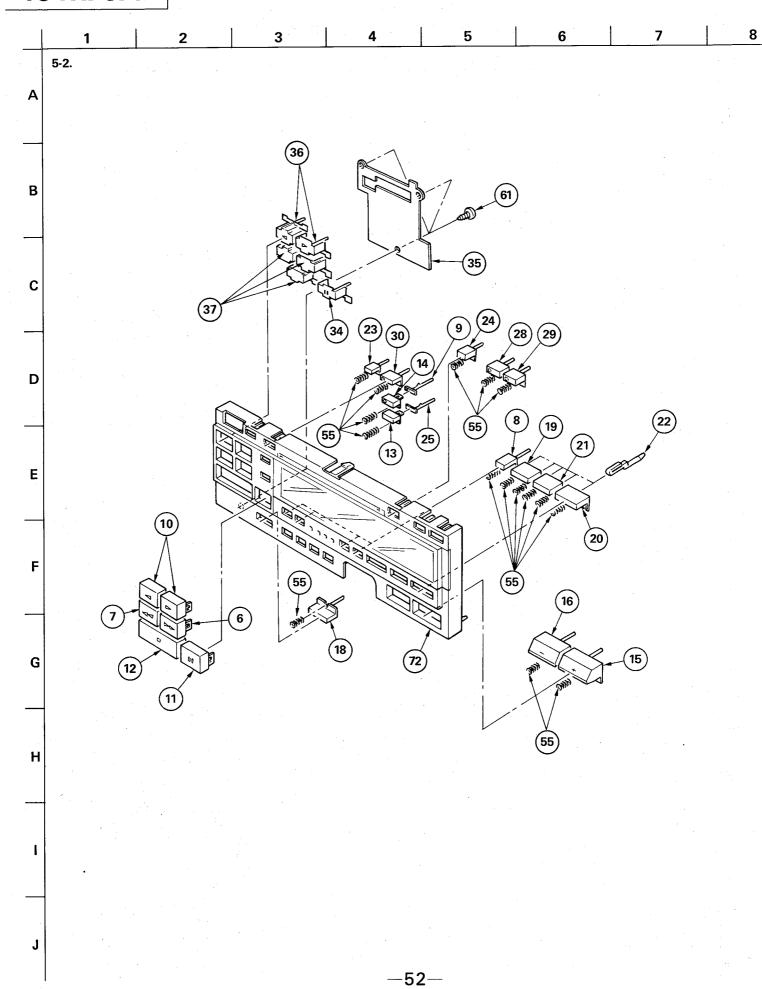


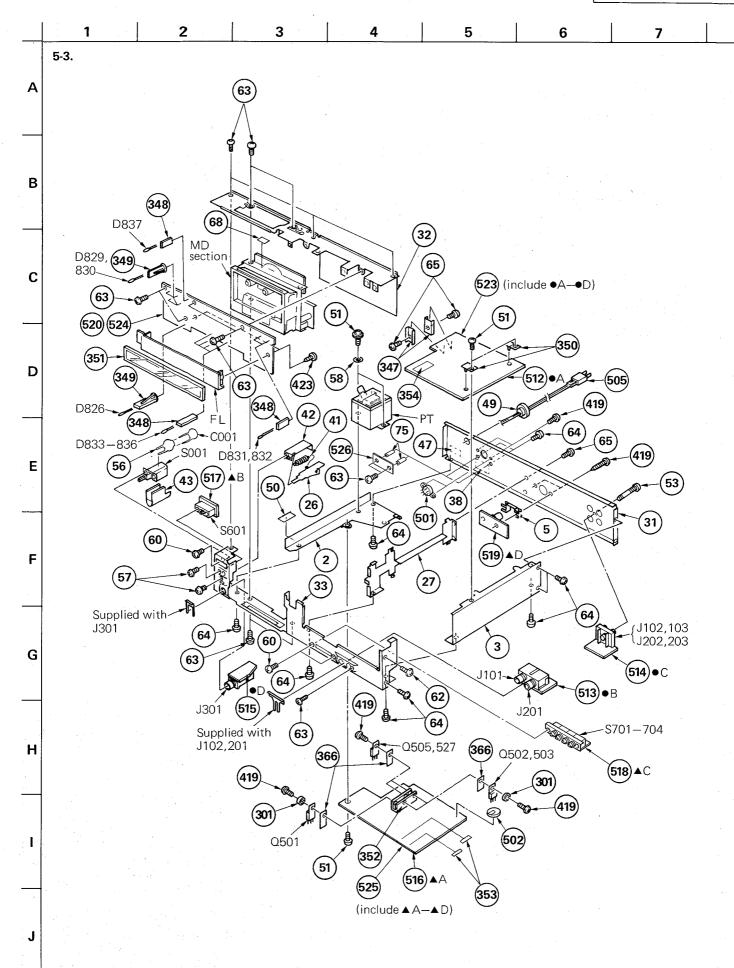


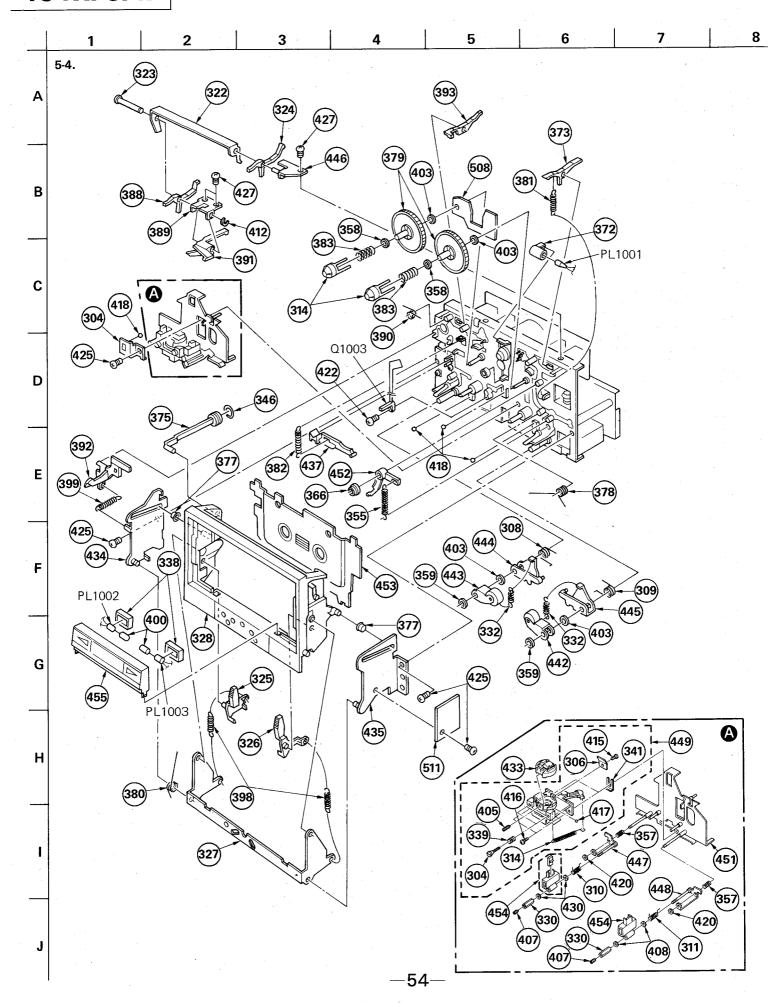


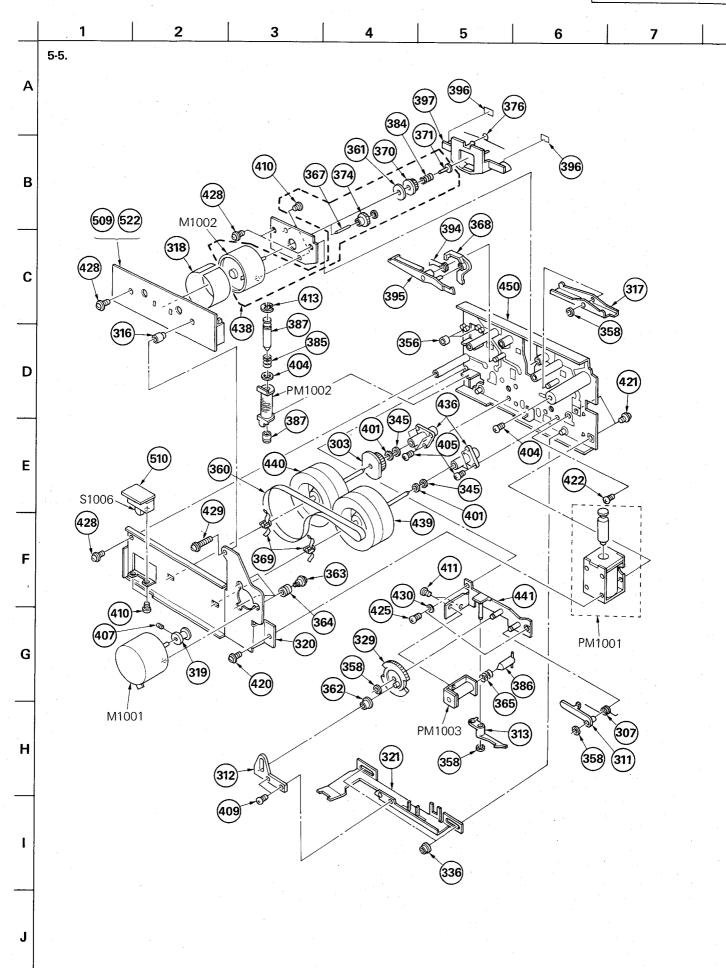
SECTION 5
EXPLODED VIEWS AND PARTS LIST











### GENERAL SECTION

No.	Part No.	Description
1	3-304-419-00 3-304-419-31	(SILVER)BUTTON, EJECT (BLACK)BUTTON, EJECT
	<b>♦</b> ;3-304-423-00 <b>♦</b> ;3-304-944-00	PLATE, SIDE, LEFT PLATE, SIDE, RIGHT
4 4	3-307-538-21 3-307-538-51	(BLACK)KNOB, SWITCH, TIMER (SILVER)KNOB, SWITCH, TIMER
5 6 7	<b>♦</b> ;3-315-156-00 3-317-101-01 3-317-101-11	SPACER, REMOTE CONTROL BUTTON, REW-FF BUTTON, REW-FF
8 9 10	3-317-102-00 3-317-103-00 3-317-104-00	BUTTON (A), SQUARE MOLD, RECORD BUTTON BUTTON, REV-FWD
11 12 13 14	3-317-105-00 3-317-106-00 3-317-107-00 3-317-108-00	BUTTON, PAUSE BUTTON, STOP BUTTON, RECORD MUTE BUTTON, RECORD
15 15		(SILVER)BUTTON (+), RECORD LEVEL (BLACK)BUTTON (+), RECORD LEVEL
16 16		(SILVER)BUTTON (-), RECORD LEVEL (BLACK)BUTTON (-), RECORD LEVEL
17 17	3-317-112-00 3-317-112-11	(SILVER)KNOB, REVERSE MODE (BLACK)KNOB, REVERSE MODE
18 19 20	3-317-114-01	KNOB (A), SQUARE KNOB (B), SQUARE KNOB (B), SQUARE
21 22		KNOB (B), SQUARE MOLD, CONTROL BUTTON
23 23		(SILVER)BUTTON (B), SQUARE (BLACK)BUTTON (B), SQUARE
24 25 26		BUTTON (B), SQUARE MOLD, RECORD MUTE BUTTON SLIDER, EJECT
27 28 29		PLATE, RELAY BUTTON, TRANSLUCENT BUTTON, TRANSLUCENT
30 30	3-317-125-21 3-317-125-31	(SILVER)BUTTON, TRANSLUCENT (BLACK)BUTTON, TRANSLUCENT
31 31 31 32 33	♦;3-317-129-11 ♦;3-317-129-21 ♦;3-317-129-31 ♦;3-317-162-01 •;3-317-130-00 •;3-317-135-00	(AEP)PLATE, JACK (US)PLATE, JACK (E2/3)PLATE, JACK (G-AEP)PLATE, JACK JOINT CHASSIS, AMPLIFIER MOLD, PAUSE BUTTON

#### GENERAL SECTION

No.	Part No.	Description
35 <b>→</b> 36 37	;3-317-136-00 3-317-137-00 3-317-138-00	GUIDE, CONTROL BUTTON MOLD, FWD BUTTON MOLD, STOP BUTTON
38 38 38 38	3-317-148-01 3-317-150-01 3-317-154-01 3-317-160-01	(E2/3)LABEL, MODEL NUMBER (US)LABEL, MODEL NUMBER (AEP)LABEL, MODEL NUMBER (G-AEP)LABEL, MODEL NUMBER
39 <b>↓</b>	;3-317-156-01	BRACKET, FUSE
40	3-317-157-01	INSTRUCTIONS
41	3-534-238-XX	SPRING, TENSION
42 <b>♦</b> 43 44	;3-575-502-00 3-575-524-00 3-575-538-11	BRACKET, EJECT (US,AEP)COVER, POWER SWITCH PLATE, BOTTOM
45	3-575-539-00	(SILVER)COVER, TOP
45	3-575-539-41	(BLACK)COVER, TOP
46	3-576-731-00	FELT (H)
47	3-701-030-00	LABEL, SERIAL NUMBER
48	3-701-437-21	WASHER
49	3-701-682-00	(US,E2/3)STOPPER, CORD
49	3-703-244-00	(AEP,G-AEP)BUSHING, CORD
50	3-703-044-26	(US)LABEL, CAUTION
51	3-703-249-01	SCREW, S TIGHT, +PTTWH 3X6
52	4-889-321-01	SCREW
53	3-703-473-00	SCREW, TERMINAL
54	3-703-710-01	STICKER, SONY SYMBOL (12)
55	4-864-435-00	SPRING, COMPRESSION
56 56	4-875-455-01 4-875-455-21	(AEP,G-AEP)COVER (DIA,20) CAPACITOR (E2/3)COVER (DIA,20) CAPACITOR
57	7-621-775-10	SCREW +B 2.6X4
58	7-623-210-22	SW 4, TYPE 2
59	7-682-247-04	SCREW +K 3X6
60 61 62	7-682-647-01 7-685-534-19 7-685-870-01	SCREW +PS 3X6 SCREW +BTP 2.6X8 TYPE2 N-S SCREW +BVTT 3X5 (S)
63	7-685-871-01	SCREW +BVTT 3X6 (S)
64	7-685-871-09	SCREW +BVTT 3X6 (S)
65	7-685-872-01	SCREW +BVTT 3X8 (S)
66 67 68	9-911-815-02 9-911-837-XX 9-911-841-XX	CUSHION (B), FILTER CUSHION
69	9-911-850-XX	FELT, TENSION REGULATOR
70	9-911-863-XX	SHEET, INSULATING

### NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked " " are not stocked since they are seldom required for routine service. Some delay should be antici-pated when ordering these items.
- Due to standardization, parts with part numbers ( $\Delta$ - $\Delta\Delta\Delta$ - $\Delta\Delta\Delta$ -XX or  $\Delta$ - $\Delta\Delta\Delta$ - $\Delta\Delta\Delta$ -X) may be different from those used in the
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

#### CAPACITORS:

All capacitors are in uF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:uF, PF:uuF.

Դ **MMH** : mH, UH : µH

#### SEMICONDUCTORS

In each case, U : μ, for example: UA···: μΑ···, UPA···: μΡΑ···, UPC···: μΡC,  $\text{UPD}\cdots:\ \mu\text{PD}\cdots$ 

#### GENERAL SECTION

<u>No .</u>	Part No.	Description
71 71	A-2169-073-A A-2169-081-A	(SILVER)WINDOW ASSY, CASSETTE (BLACK)WINDOW ASSY, CASSETTE
72 72	A-2191-006-A A-2191-014-A	(SILVER)ESCUTCHEON ASSY, METER (BLACK)ESCUTCHEON ASSY, METER
73 73	A-2310-235-A A-2310-245-A	(SILVER)PANEL ASSY, FRONT (BLACK)PANEL ASSY, FRONT
74 74	X-3304-405-0 X-3304-911-0	(SILVER)KNOB ASSY, POWER (BLACK)KNOB ASSY, POWER
75	2-066-111-08	(G-AEP)COLLAR

# ACCESSORY & PACKING MATERIAL

No.	Part No.	Description
101 102 103	1-551-734-11 3-315-149-00 3-315-150-00	CORD, CONNECTION (RK-74A) CUSHION (LEFT), LOWER CUSHION (RIGHT), LOWER
104 105 106	3-315-151-00 3-315-152-00 3-317-159-00	CUSHION (LEFT), UPPER CUSHION (RIGHT), UPPER CARTON
107 108	3-573-625-00 3-701-630-00	SHEET, POLYETHYLENE BAG, POLYETHYLENE
109 109 109	3-773-670-11 3-773-670-21 3-773-670-41	(AEP,G-AEP,E2/3)MANUAL, INSTRUCTION (US)MANUAL, INSTRUCTION (AEP,G-AEP)MANUAL, INSTRUCTION
110 111	3-793-828-11 X-3701-105-0	QUESTIONNAIRE ROD ASSY, CLEANING, HEAD

MECHANISM SECTION							
No. Part No.	Description						
301 2-371-561-00	BUSHING (P), INSULATING						
302 3-306-223-00	LEVER (B), TRIGGER						
303 3-306-224-00	GEAR, PINION						
304 <b>\( \)</b> ;3-306-225-00 305 3-306-227-01 306 3-306-228-01	SPRING SCREW, AZIMUTH ADJUSTMENT SPRING						
307 3-306-237-00	SPRING						
308 3-306-239-00	SPRING (LEFT)						
309 3-306-240-00	SPRING (RIGHT)						
310 3-306-249-00 311 3-306-250-00 312 3-306-251-00	SPRING (LEFT) SPRING (RIGHT) PLATE (A), SLIDE						
313 3-306-253-00	LEVER (A), TRIGGER						
314 3-306-257-00	CLAW, REEL TABLE						
315 3-306-258-01	SPRING, TENSION						
316 3-306-259-00	SPACER, PC BOARD						
317 <b>3</b> ;3-306-260-00	LEVER, FWD						
318 3-306-261-00	PLATE, SHIELD, MOTOR						
319 3-306-262-00	PULLEY (R), MOTOR						
320 •;3-306-270-00	RETAINER (RIGHT), THRUST						
321 •;3-306-271-00	SLIDER (A), SELECTION						
322 <b>\( \)</b> ;3-306-279-00 323 <b>\( \)</b> ;3-306-281-00 324 <b>\( \)</b> ;3-306-282-00	LEVER, ERASING PROTECTION SHAFT, DETECTION LEVER LEVER, REC DETECTION, REVERSE						
325 3-306-283-00	RETAINER (LEFT), CASSETTE						
326 3-306-284-00	RETAINER (RIGHT), CASSETTE						
327 <b>4</b> ;3-306-285-00	LEVER, HOLDER FULCRUM						
328 3-306-286-00	HOLDER, CASSETTE						
329 3-306-287-00	GEAR, TRIGGER						
330 3-306-288-00	NUT, ADJUSTMENT, TAPE GUIDE						
331 3-306-289-01	SPRING, TENSION						
332 3-306-295-01	SPRING, TENSION						
333 3-306-296-01	RUBBER, STOPPER						
334 3-306-297-01	SEAM, HEAD ADJUSTMENT						
335 3-306-297-11	SEAM, HEAD ADJUSTMENT						
336 3-307-367-00	BUSHING, SELECT LEVER						
337 3-307-394-00	RETAINER (B), THRUST						
338 3-307-459-00	RUBBER, HOLDER						
339 3-307-460-00	SPRING, COMPRESSION						
340 3-307-477-01	SEAM (A), HEAD ADJUSTMENT						
341 3-307-477-11	SEAM (A), HEAD ADJUSTMENT						
342 3-307-477-21	SEAM (A), HEAD ADJUSTMENT						
343 3-307-477-31	SEAM (A), HEAD ADJUSTMENT						
344 3-307-477-41	SEAM (A), HEAD ADJUSTMENT						
345 3-307-482-00	WASHER, LUMILER						

# NOTE:

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- Items marked " " are not stocked since they are seldom required for routine service. Some delay should be antici-pated when ordering these items.
- Due to standardization, parts with part numbers  $(\Delta-\Delta\Delta\Delta-\Delta\Delta\Delta-XX)$  or  $\Delta-\Delta\Delta\Delta\Delta-\Delta\Delta\Delta-X)$  may be different from those used in the set.
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### CAPACITORS:

All capacitors are in uF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF: uF, PF: uuF.

# COILS

: MMH : mH, UH : μH

# SEMICONDUCTORS

In each case,  $U: \mu$ , for example:  $UA\cdots: \mu A\cdots$ ,  $UPA\cdots: \mu PA\cdots$ ,  $UPC\cdots: \mu PC$ , UPD····: μPD····

#### MECHANISM SECTION

No.	Part No.	Description
	3-312-441-00 \$;3-312-615-11 \$;3-317-118-00	RING, PISTON HEAT SINK HOLDER (A), LED
350	•;3-317-119-00 3-317-122-00 •;3-317-126-00	HOLDER (B), LED HINGE, PC BOARD HOLDER, FL TUBE
353	<b>♦</b> ;3-317-140-00 <b>♦</b> ;3-317-143-00 <b>♦</b> ;3-317-144-01	HEAT SINK, SYSTEM CONTROL BOX (2), IC SHIELD PLATE, SHIELD, BIAS
355 356 357	3-534-027-00 3-538-051-00 3-555-122-00	SPRING, TENSION RUBBER, BRAKE SPRING, COMPRESSION
358 359 360	3-558-708-21	WASHER, STOPPER WASHER, STOPPER BELT, CAPSTAN
361 362 363		FELT, LIMITER BOSS, FITTING, SPRING SCREW, MOTOR
364 365 366	3-571-850-11	CUSHION, MOTOR SPRING, COMPRESSION SHEET (A), INSULATING
367 368 369	3-575-304-00 3-575-318-00 3-575-321-00	SHAFT, GEAR, FR LEVER, LOCK, TUNING RETAINER, THRUST, CAPSTAN
370 371 372	3-575-324-00 3-575-327-00 3-575-328-00	GEAR, LIMITER STOPPER HOLDER, LAMP
373 374 375		LEVER, DETECTION, HALF GEAR, FR PISTON
376 377 378	3-575-345-00 3-575-348-00 3-575-351-00	SPRING ROLLER, GUIDE, THREADING SPRING
379 380 381		TABLE, REEL SPRING SPRING, TENSION
382 383 384		SPRING, TENSION SPRING, COMPRESSION SPRING, COMPRESSION
385 386 387	3-575-415-11	SPRING, COMPRESSION ARBOR, MOVABLE ARBOR, FIXED
	3-575-438-00 •;3-575-440-00	LEVER, DETECTION BRACKET, LEVER, DETECTION

#### MECHANISM SECTION

No.	Part No.	Description
391	3-575-446-00	LEVER, DETECTION, METAL
392	3-575-448-00	LEVER, LOCK
393	3-575-449-00	LEVER, DETECTION, REC
394	3-575-458-00	SPRING
395	3-575-460-00	LEVER, SELECT TUNE
396	3-575-469-00	LINING, BRAKE
397	3-575-491-00	PLATE, BRAKE
398	3-578-390-00	SPRING, TENSION
399	3-632-261-00	SPRING
400	3-669-305-00	BUSHING
401	3-701-438-11	WASHER, 2.5MM (t=0.25)
402	3-701-439-11	WASHER, 3MM (t=0.25)
403	3-701-439-21	WASHER, 3MM (t=0.50)
404	3-701-444-11	WASHER, 6
405	7-621-714-16	SET-SCREW, SLOT 1.7X2.5
406	7-621-714-36	SET-SCREW, SLOT 1.7X3 FLAT POINT
407	7-621-732-08	SET-SCT, HEX. 2X3 FLAT POINT
408	7-621-772-05	SCREW +B 2X3
409	7-621-772-08	SCREW +B 2X3
410	7-621-775-00	SCREW +B 2.6X3
411	7-621-775-10	SCREW +B 2.6X4
412	7-624-104-04	STOP RING 2.0, TYPE -E
413	7-624-108-04	RING, RETAINING E-4
414	7-624-109-04	STOP RING 5.0, TYPE -E
415	7-627-552-28	SCREW, PRECISION +P 1.7X2
416	7-627-556-58	SCREW +P 2.6X5
417	7-671-111-11	STEEL BALL 1.5MM
418	7-671-113-02	STEEL BALL 3
419	7-682-548-04	SCREW +B 3X8
420	7-682-947-01	SCREW +PSW 3X6
421	7-682-949-01	SCREW +PSW 3X10
422	7-685-104-19	SCREW +P 2X6 TYPE2 NON-SLIT
423	7-685-647-71	SCREW +BVTP 3X10 TYPE2 SLIT
424	7-685-860-04	SCREW +BVTT 2.6X4 (S)
425	7-685-861-01	SCREW +BVTT 2.6X5 (S)
426	7-685-870-01	SCREW +BVTT 3X5 (S)
427	7-685-871-01	SCREW +BVTT 3X6 (S)
428	7-687-246-21	SCREW, TOTSU PTPWH 3X8, TYPE2
429	7-687-250-21	SCREW, TOTSU PTPWH 3X16, TYPE2
430	7-688-001-01	W 2, SMALL
431	7-688-002-01	W 2.6, SMALL
432	9-911-815-02	CUSHION
434	A-2108-089-A \$;X-3575-301-0 \$;X-3575-302-0	FITTING BLOCK ASSY, HEAD PLATE (A) ASSY, HOLDER FULCRUM PLATE (B) ASSY, FULCRUM

The mechanical parts with no reference number in the exploded views are not supplied.

390 3-575-441-00 SPRING

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### CAPACITORS:

All capacitors are in µF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:µF, PF:µµF.

# COILS

· MMH : mH, UH : μH

# SEMICONDUCTORS

In each case, U : μ, for example: UA···: μΑ···, UPA···: μΡΑ···, UPC···: μΡC,  $\text{UPD}\cdots:\ \mu\text{PD}\cdots$ 

#### MECHANISM SECTION

No. Part No.	Description
436 X-3575-303-0	METAL ASSY, CAPSTAN
437 X-3575-310-0	LEVER ASSY, TENSION, BACK
438 X-3575-348-0	MOTOR ASSY, REEL
439 X-3575-356-0	FLYWHEEL (LEFT) ASSY
440 X-3575-357-0	FLYWHEEL (RIGHT) ASSY
441 •;X-3575-358-0	BRACKET ASSY, SOLENOID
442 X-3575-360-0	PINCH LEVER (RIGHT) ASSY
443 X-3575-361-0	PINCH LEVER (LEFT) ASSY
444 •;X-3575-362-0	PLATE (LEFT) ASSY, LIMITER
445 ♣;X-3575-363-0	PLATE (RIGHT) ASSY, LIMITER
446 ♣;X-3575-364-0	BRACKET ASSY, LEVER
447 ♣;X-3575-365-0	LEVER (LEFT) ASSY, GUIDE
448 •; X-3575-366-0 449	LEVER (RIGHT) ASSY, GUIDE HEAD BLOCK ASSY CHASSIS ASSY, MECHANICAL
451 X-3575-369-0	CHASSIS (RIGHT) ASSY, HEAD
452 X-3575-370-0	LEVER (R) ASSY, BACK TENSION
453 X-3575-371-0	RETAINER ASSY, CASSETTE
454 X-3575-376-1	TAPE GUIDE ASSY
455 X-3575-375-1	DILECT HOLD ASSY

# ELECTRICAL PARTS

Ref.No.	Part No.	Description
50-2 <u>∧</u> 503	.1-526-576-51 .1-528-120-00 1-533-131-00 1-535-506-11	(E2/3)SELECTOR, POWER VOLTAGE BATTERY, LITHIUM (CR-2025) HOLDER, FUSE (E2/3)CONNECTION PRESS TERMINAL
505 <u>∧</u> 505 <u>∧</u>	.1-534-817-XX .1-551-472-00 .1-551-506-XX .1-555-734-00	(AEP,G-AEP).CORD, POWER, EURO PLUG (E2)CORD, POWER (US)CORD, POWER (E3)CORD, POWER

#### **ELECTRICAL PARTS**

Ref.No	. Part No.	Description	<u>n</u> .		
507	<b>♦</b> ;1-560-060-00 1-562-544-00 <b>♦</b> ;1-603-823-00				
510	<b>♦</b> ;1-611-500-00 <b>♦</b> ;1-611-501-00 <b>♦</b> ;1-611-502-00	PC BOARD, M PC BOARD, D PC BOARD, H		TION	
513	\$;1-611-576-00 \$;1-611-577-00 \$;1-611-578-00	PC BOARD, A PC BOARD, M PC BOARD, I		JACK	
516	;1-611-579-00 ;1-611-580-11 ;1-611-581-11	PC BOARD, H PC BOARD, S PC BOARD, T	YSTEM CONTR		
519	\$;1-611-582-11 \$;1-611-583-11 \$;1-611-585-00	PC BOARD, DI PC BOARD, R PC BOARD, I	EMOCON SOCK	)MODE SW ET	
521 521	;1-612-397-21 1-612-397-31	(US) (AEP,G-AEP,	PC 1 E2/3)PC 1	BOARD, FU BOARD, FU	USE USE
523 524 525 526	;A-2023-298-A ;A-2056-208-A ;A-2056-210-A ;A-2056-220-A 1-612-712-11 \.1-161-744-00	MOUNTED PCB MOUNTED PCB MOUNTED PCB MOUNTED PCB (G-AEP)P	, AUDIO , INDICATION , SYSTEM CON CBOARD, FILT	ITROL ER	
COOL	7.1-101-144-00	UAP, UEKAMIU			
C002 C003 C004	1-161-741-00 1-161-741-00 1-161-741-00	(G-AEP) (G-AEP) (G-AEP)	CERAMIC CERAMIC	1000P 1000P 1000P	F F
C002 C003	1-161-741-00 1-161-741-00	(G-AEP)	CERAMIC CERAMIC CERAMIC CERAMIC	1000P 1000P	F F
C002 C003 C004	1-161-741-00 1-161-741-00 1-161-741-00 1-161-740-00	(G-AEP) (G-AEP) (US)	CERAMIC CERAMIC CERAMIC CERAMIC	1000P 1000P 1000P 470PF	F F
C002 C003 C004 C005 C006	1-161-741-00 1-161-741-00 1-161-741-00 1-161-740-00 1-161-740-00 1-123-356-00	(G-AEP) (G-AEP) (G-AEP) (US)(US)	CERAMIC CERAMIC CERAMIC CERAMIC CERAMIC CERAMIC TOMF	1000P 1000P 1000P 470PF 470PF 20%	F F F
C002 C003 C004 C005 C006 C101 C102 C103 C104	1-161-741-00 1-161-741-00 1-161-740-00 1-161-740-00 1-161-740-00 1-123-356-00 1-123-356-00 1-123-356-00 1-123-369-00	(G-AEP) (G-AEP) (G-AEP) (US) (US) ELECT CERAMIC ELECT ELECT ELECT	CERAMIC CERAMIC CERAMIC CERAMIC CERAMIC CERAMIC 10MF 100PF 10MF 4.7MF	1000P 1000P 1000P 470PF 470PF 20% 5%	F F F 16V 50V 16V 50V
C002 C003 C004 C005 C006 C101 C102 C103 C104 C105	1-161-741-00 1-161-741-00 1-161-741-00 1-161-740-00 1-161-740-00 1-123-356-00 1-123-356-00 1-123-369-00 1-123-330-00 1-161-380-00 1-161-321-00	(G-AEP)(G-AEP)(US	CERAMIC CERAMIC CERAMIC CERAMIC CERAMIC  10MF 100PF  10MF 4.7MF 22MF  0.0015MF 680PF	1000P 1000P 1000P 470PF 470PF 20% 5% 20% 20% 10%	16V 50V 16V 50V 16V 50V 50V
C002 C003 C004 C005 C006 C101 C102 C103 C104 C105 C106 C111 C112	1-161-741-00 1-161-741-00 1-161-741-00 1-161-740-00 1-161-740-00 1-123-356-00 1-123-356-00 1-123-369-00 1-123-330-00 1-161-380-00 1-161-321-00 1-130-305-00 1-124-185-00 1-108-571-00	(G-AEP)(G-AEP)(G-AEP)(US)	CERAMIC CERAMIC CERAMIC CERAMIC CERAMIC  10MF 100PF  10MF 4.7MF 22MF  0.0015MF 680PF 0.022MF  4.7MF 0.0047MF	1000P 1000P 1000P 470PF 470PF 20% 20% 20% 10% 5%	16V 50V 16V 50V 16V 50V 16V 50V 100V
C002 C003 C004 C005 C006 C101 C102 C103 C104 C105 C111 C112 C113 C114 C115	1-161-741-00 1-161-741-00 1-161-741-00 1-161-740-00 1-161-740-00 1-123-356-00 1-123-356-00 1-123-356-00 1-123-369-00 1-123-330-00 1-161-380-00 1-161-321-00 1-130-305-00 1-161-316-00 1-130-630-00 1-130-633-00	(G-AEP) (G-AEP) (US) (US) (US) ELECT CERAMIC ELECT ELECT CERAMIC CERAMIC CERAMIC CERAMIC FILM ELECT MYLAR CERAMIC FILM FILM	CERAMIC CERAMIC CERAMIC CERAMIC  CERAMIC  10MF 100PF  10MF 4.7MF 22MF  0.0015MF 680PF 0.022MF  4.7MF 0.0047MF 270PF  0.068MF 0.12MF	1000P 1000P 1000P 470PF 470PF 20% 20% 20% 20% 20% 10% 5% 20% 5%	16V 50V 16V 50V 16V 50V 100V 50V 50V 50V 50V 50V

#### NOTE

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked " " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers ( $\Delta$ - $\Delta\Delta\Delta$ - $\Delta\Delta\Delta$ - $\Delta\Delta\Delta$ - $\DeltaX$  or  $\Delta$ - $\Delta\Delta\Delta\Delta$ - $\Delta\Delta\Delta$ - $\DeltaX$ ) may be different from those used in the set.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

#### CAPACITORS:

All capacitors are in  $\mu F$ . Common capacitors are omitted. Refer to the following lists for their part numbers. MF: $\mu F$ , PF: $\mu \mu F$ .

#### COILS

· MMH : mH, UH : μH

# SEMICONDUCTORS

In each case, U : μ, for example: UA···: μΑ···, UPA···: μΡΑ···, UPC···: μPC, UPD···: μPD··· The components identified by shading and mark are critical for safety.

Replace only with part number specified.

	ELECTRIC	AL PARTS					ELECTRIC	AL PARTS			
Ref.No.	Part No.	Description				Ref.No.	Part No.	Description			
C127	1-130-635-00	FILM	0.18MF	5%	50V	C226	1-123-380-00	ELECT	1MF	20%	50V
C128	1-130-630-00	FILM	0.068MF	5%	50V	C227	1-130-635-00	FILM	0.18MF	5%	50V
C129	1-123-380-00	ELECT	1MF	20%	50V	C228	1-130-630-00	FILM	0.068MF	5%	50V
C130	1-130-633-00	FILM	0.12MF	5%	50V	C229	1-123-380-00	ELECT	1MF	20%	50V
C131	1-130-620-00	FILM	0.01MF	5%	50V	C230	1-130-633-00	FILM	0.12MF	5%	50V
C132	1-130-622-00	FILM	0.015MF	5%	50V	C231	1-130-620-00	FILM	0.01MF	5%	50V
C133	1-130-620-00	FILM	0.01MF	5%	50V	C232	1-130-622-00	FILM	0.015MF	5%	50V
C134	1-124-185-00	ELECT	4.7MF	20%	50V	C233	1-130-620-00	FILM	0.01MF	5%	50V
C135	1-123-307-00	ELECT	100MF	20%	10V	C234	1-124-185-00	ELECT	4.7MF	20%	50V
C136	1-123-307-00	ELECT	100MF	20%	10V	C235	1-123-307-00	ELECT	100MF	20%	10V
C151	1-123-369-00	ELECT	4.7MF	20%	50V	C236	1-123-307-00	ELECT	100MF	20%	10V
C152	1-130-638-00	FILM	0.33MF	5%	50V	C251	1-123-369-00	ELECT	4.7MF	20%	50V
C153	1-123-330-00	ELECT	22MF	20%	16V	C252	1-130-638-00	FILM	0.33MF	5%	50V
C154	1-124-185-00	ELECT	4.7MF	20%	50V	C253	1-123-330-00	ELECT	22MF	20%	16V
C155	1-161-318-00	CERAMIC	390PF	10%	50V	C254	1-124-185-00	ELECT	4.7MF	20%	50V
C156	1-107-036-00	MICA	68PF	5%	500V	C255	1-161-318-00	CERAMIC	390PF	10%	50V
C157	1-107-165-00	MICA	56PF	5%	500V	C256	1-107-036-00	MICA	68PF	5%	500V
C158	1-108-577-00	MYLAR	0.0082MF	5%	50V	C257	1-107-165-00	MICA	56PF	5%	500V
C159	1-130-620-00	FILM	0.01MF	5%	50V	C258	1-108-577-00	MYLAR	0.0082MF	5%	50V
C160	1-130-629-00	FILM	0.056MF	5%	50V	C259	1-130-620-00	FILM	0.01MF	5%	50V
C161	1-130-620-00	FILM	0.01MF	5%	50V	C260	1-130-629-00	FILM	0.056MF	5%	50V
C162	1-130-630-00	FILM	0.01MF	5%	50V	C261	1-130-620-00	FILM	0.01MF	5%	50V
C163		FILM	0.068MF	5%	50V	C262	1-130-620-00	FILM	0.01MF	5%	50V
C164		FILM	0.01MF	5%	50V	C263	1-130-630-00	FILM	0.068MF	5%	50V
C165	1-108-567-00	MYLAR	0.0033MF	5%	50V	C264	1-130-620-00	FILM	0.01MF	5%	50V
C166	1-130-626-00	FILM	0.033MF	5%	50V	C265	1-108-567-00	MYLAR	0.0033MF	5%	50V
C176	1-123-369-00	ELECT	4.7MF	20%	50V	C266	1-130-626-00	FILM	0.033MF	5%	50V
C177	1-123-369-00	ELECT	4.7MF	20%	50V	C276	1-123-369-00	ELECT	4.7MF	20%	50V
C192	1-123-356-00	ELECT	10MF	20%	16V	C277	1-123-369-00	ELECT	4.7MF	20%	50V
C201	1-123-356-00	ELECT	10MF	20%	16V	C292	1-123-356-00	ELECT	10MF	20%	16V
C202	1-161-271-00	CERAMIC	100PF	5%	50V	C301	1-123-337-00	ELECT	1000MF	20%	25V
C203	1-123-356-00	ELECT	10MF	20%	16V	C302	1-123-337-00	ELECT	1000MF	20%	25V
C204	1-123-369-00	ELECT	4.7MF	20%	50V	C303	1-123-307-00	ELECT	100MF	20%	10V
C205	1-123-330-00	ELECT	22MF	20%	16V	C304	1-123-307-00	ELECT	100MF	20%	10V
C206	1-161-380-00	CERAMIC	0.0015MF	10%	50V	C305	1-124-070-00	ELECT	220MF	20%	10V
C211	1-161-321-00	CERAMIC	680PF	10%	50V	C306	1-124-070-00	ELECT	220MF	20%	10V
C212	1-130-305-00	FILM	0.022MF	5%	100V	C307	1-123-321-00	ELECT	220MF	20%	16V
C213	1-124-185-00	ELECT	4.7MF	20%	50V	C308	1-123-321-00	ELECT	220MF	20%	16V
C214	1-108-571-00	MYLAR	0.0047MF	5%	50V	C309	1-123-382-00	ELECT	3.3MF	20%	50V
C215	1-161-316-00	CERAMIC	270PF	10%	50V	C311	1-123-356-00	ELECT	10MF	20%	16V
C221	1-130-630-00	FILM	0.068MF	5%	50V	C312	1-123-379-00	ELECT	0.47MF	20%	50V
C222	1-130-633-00	FILM	0.12MF	5%	50V	C313	1-124-089-00	ELECT	2.2MF	20%	50V
C223	1-130-635-00	FILM	0.18MF	5%	50V	C314	1-130-023-00	FILM	0.0027MF	5%	100V
C224	1-130-637-00	FILM	0.27MF	5%	50V	C315	1-130-023-00	FILM	0.0027MF	5%	100V
C225	1-130-625-00	FILM	0.027MF	5%	50V	C316	1-130-289-00	FILM	0.0047MF	5%	100V

#### NOTE:

# CAPACITORS:

ARITORS:
All capacitors are in µF. Common capacitors are omitted. Refer to the following lists for their part numbers.
MF:µF, PF:µµF.

# COILS

 $^{\circ}$  MMH : mH, UH :  $\mu\text{H}$ 

# SEMICONDUCTORS

In each case, U : μ, for example: UA···: μΑ···, UPA···: μΡΑ···, UPC···: μΡC,  $\text{UPD}\cdots:\ \mu\text{PD}\cdots$ 

The mechanical parts with no reference number in the exploded views are not supplied.

Items marked " " are not stocked since they are seldom required for routine service. Some delay should be antici-pated when ordering these items.

<sup>·</sup> Due to standardization, parts with part numbers  $(\Delta - \Delta \Delta \Delta - \Delta \Delta \Delta - XX)$  or  $\Delta - \Delta \Delta \Delta \Delta - \Delta \Delta \Delta - X$ may be different from those used in the set.

 $<sup>\</sup>cdot$  If there are two or more same circuits in a there are two more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

Ref.No.	Part No.	Description			
C317	1-129-714-00	FILM	0.01MF	5%	630V
C324	1-123-307-00	ELECT	100MF	20%	10V
C331	1-123-307-00	ELECT	100MF	20%	10V
C332	1-123-307-00	ELECT	100MF	20%	10V
C333	1-123-307-00	ELECT	100MF	20%	10V
C334	1-123-307-00	ELECT	100MF	20%	10V
C335	1-123-330-00	ELECT	22MF	20%	16V
C337	1-123-356-00	ELECT	10MF	20%	16V
C339	1-161-330-00	CERAMIC	0.01MF	30%	25V
C340	1-161-330-00	CERAMIC	0.01MF	30%	25V
C501	1-123-364-00	ELECT	1000MF	20%	50V
C502	1-123-380-00	ELECT	1MF	20%	50V
C503	1-123-357-00	ELECT	22MF	20%	50V
C504	1-123-321-00	ELECT	220MF	20%	16V
C505	1-123-328-00	ELECT	4.7MF	20%	25V
C506	1-123-310-00	ELECT	470MF	20%	10V
C507	1-123-356-00	ELECT	10MF	20%	16V
C508	1-123-312-00	ELECT	2200MF	20%	10V
C509	1-123-306-00	ELECT	47MF	20%	10V
C510	1-123-308-00	ELECT	220MF	20%	10V
C511	1-123-356-00	ELECT	10MF	20%	16V
C512	1-123-338-00	ELECT	2200MF	20%	25V
C513	1-123-380-00	ELECT	1MF	20%	50V
C514	1-161-330-00	CERAMIC	0.01MF	30%	25V
C515	1-161-330-00	CERAMIC	0.01MF	30%	25V
C516	1-161-330-00	CERAMIC	0.01MF	30%	25V
C517	1-130-628-00	FILM	0.047MF	5%	50V
C518	1-130-628-00	FILM	0.047MF	5%	50V
C519	1-130-634-00	FILM	0.15MF	5%	50V
C520	1-123-380-00	ELECT	1MF	20%	50V
C521	1-162-056-00	CERAMIC	33PF	5%	50V
C522	1-162-056-00	CERAMIC	33PF	5%	50V
C523	1-161-974-00	CERAMIC	0.1MF	0	16V
C524	1-161-494-00	CERAMIC	0.022MF	30%	25V
C525	1-161-494-00	CERAMIC	0.022MF	30%	25V
C526	1-161-494-00	CERAMIC	0.022MF	30%	25V
C527	1-161-494-00	CERAMIC	0.022MF	30%	25V
C528	1-161-494-00	CERAMIC	0.022MF	30%	25V
C529	1-161-494-00	CERAMIC	0.022MF	30%	25V
C530	1-161-494-00	CERAMIC	0.022MF	30%	25V
C531	1-123-295-00	ELECT	100MF	20%	6.3V
C532	1-123-381-00	ELECT	2.2MF	20%	50V
C533	1-123-381-00	ELECT	2.2MF	20%	50V
C534	1-123-298-00	ELECT	470MF	20%	6.3V
C535	1-161-326-00	CERAMIC	0.0022MF	30%	50V

#### ELECTRICAL PARTS

Ref.No.	Part No.	Description		
C536 C537 C538	1-161-326-00 1-161-326-00 1-123-363-00	CERAMIC CERAMIC ELECT	0.0022MF 0.0022MF 470MF	30% 50V 30% 50V 20% 50V
C539 C540 C541	1-123-295-00 1-161-974-00 1-161-262-00	ELECT CERAMIC CERAMIC	100MF 0.1MF 18PF	20% 6.3V 0 16V 5% 50V
C542 C543 C544	1-161-262-00 1-123-356-00 1-124-089-00	CERAMIC ELECT ELECT	18PF 10MF 2.2MF	5% 50V 20% 16V 20% 50V
C701 C702 C703	1-161-330-00 1-161-494-00 1-123-356-00	CERAMIC CERAMIC ELECT	0.01MF 0.022MF 10MF	30% 25V 30% 25V 20% 16V
C704 C803 C806	1-123-319-00 1-123-356-00 1-123-354-00	ELECT ELECT ELECT	47MF 10MF 3.3MF	20% 16V 20% 25V 20% 50V
C807 C808 C809 C810 C1001 C1002 C1003	1-130-623-00 1-123-356-00 1-123-295-00 1-161-741-00 1-161-327-00 1-161-327-00 1-123-332-00	FILM ELECT ELECT (US,G-AEP) CERAMIC CERAMIC ELECT	0.018MF 10MF 100MF .CERAMIC 0.0 0.0033MF 0.0033MF 47MF	5% 50V 20% 50V 20% 6.3V 22MF 30% 25V 30% 50V 30% 50V 20% 16V
C1004 C1005	1-123-322-00 1-123-307-00	ELECT ELECT	47MF 100MF	20% 16V 20% 10V
- <b>d</b> CNP302	;1-560-605-00 ;1-560-708-00 ;1-560-708-00	PIN, CONNECTO PIN, CONNECTO PIN, CONNECTO	OR 2P	
<b>♦</b> CNP305	;1-560-060-00 ;1-560-062-00 ;1-560-708-00	PIN, CONNECTO PIN, CONNECTO PIN, CONNECTO	OR 4P	
<b>♦</b> CNP502	;1-560-602-00 ;1-560-061-00 ;1-560-338-00	PIN, CONNECTOR PIN, C	OR 3P	
<b>♦ CNP5</b> 05	;1-560-062-00 ;1-560-063-00 ;1-560-064-00	PIN, CONNECTO PIN, CONNECTO PIN, CONNECTO	OR 5P	
<b>♦ CNP508</b>	;1-560-062-00 ;1-560-061-00 ;1-560-063-00	PIN, CONNECTO PIN, CONNECTO PIN, CONNECTO	DR 3P	
<b>♦</b> CNP513	;1-560-061-00 ;1-560-063-00 ;1-560-061-00	PIN, CONNECTO PIN, CONNECTO PIN, CONNECTO	OR 5P	
CT301	1-141-225-00	CAP, TUNING,	TRIMMER	

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- . Due to standardization, parts with part numbers ( $\Delta-\Delta\Delta\Delta-\Delta\Delta\Delta-XX$  or  $\Delta-\Delta\Delta\Delta\Delta-\Delta\Delta\Delta-XX$ ) may be different from those used in the
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

#### CAPACITORS:

All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

### COILS

· MMH : mH, UH : բH.

# SEMICONDUCTORS

In each case, U : μ, for example: UA···: μΑ···, UPA···: μΡΑ···, UPC···: μΡC,

 $\text{UPD}\cdots:\ _{\mu}\text{PD}\cdots$ 

Ref.No.	Part No.	Description
D101	8-719-107-94	DIODE 1SS202-1
D201	8-719-107-94	DIODE 1SS202-1
D301	8-719-200-02	DIODE 10E-2
D302	8-719-200-02	DIODE 10E-2
D303	8-719-200-02	DIODE 10E-2
D304	8-719-200-02	DIODE 10E-2
0305	8-719-910-52	DIODE HZ15-2L
0306	8-719-107-94	DIODE 1SS202-1
0307	8-719-910-67	DIODE HZ6C1L
D308	8-719-107-94	DIODE 1SS202-1
D309	8-719-910-67	DIODE HZ6C1L
D310	8-719-200-02	DIODE 10E-2
D311	8-719-200-02	DIODE 10E-2
D312	8-719-107-94	DIODE 1SS202-1
D501	8-719-200-02	DIODE 10E-2
D502	8-719-200-02	DIODE 10E-2
D503	8-719-200-02	DIODE 10E-2
D504	8-719-200-02	DIODE 10E-2
D505	8-719-931-08	DIODE EQBO1-08
D506	8-719-913-62	DIODE HZ36-2L
D507	8-719-910-25	DIODE HZ12B2L
D508	8-719-910-14	DIODE HZ1181L
D509	8-719-910-94	DIODE HZ981L
D510	8-719-910-71	DIODE HZ7A1L
D511	8-719-107-94	DIODE 1SS202-1
D512	8-719-107-94	DIODE 1SS202-1
D513	8-719-107-94	DIODE 1SS202-1
D514	8-719-107-94	DIODE 1SS202-1
D515	8-719-200-02	DIODE 10E-2
D516	8-719-200-02	DIODE 10E-2
D517	8-719-107-94	DIODE 1SS202-1
D518	8-719-107-94	DIODE 1SS202-1
D519	8-719-107-94	DIODE 1SS202-1
0520	8-719-107-94	DIODE 1SS202-1
0521	8-719-107-94	DIODE 1SS202-1
0701	8-719-107-94	DIODE 1SS202-1
D801	8-719-990-42	DIODE HZ24-2L
D802	8-719-107-94	DIODE 1SS202-1
D803	8-719-107-94	DIODE 1SS202-1
D804	8-719-107-94	DIODE 1SS202-1
D805	8-719-107-94	DIODE 1SS202-1
D806	8-719-107-94	DIODE 1SS202-1
D807	8-719-107-94	DIODE 1SS202-1
D808	8-719-107-94	DIODE 1SS202-1
D809	8-719-107-94	DIODE 1SS202-1

#### ELECTRICAL PARTS

		<del></del>
Ref.No.	Part No.	Description
D810	8-719-107-94	DIODE 1SS202-1
D811	8-719-107-94	DIODE 1SS202-1
D812	8-719-107-94	DIODE 1SS202-1
D813	8-719-107-94	DIODE 1SS202-1
D814	8-719-107-94	DIODE 1SS202-1
D815	8-719-107-94	DIODE 1SS202-1
D816	8-719-107-94	DIODE 1SS202-1
D817	8-719-107-94	DIODE 1SS202-1
D818	8-719-107-94	DIODE 1SS202-1
D819	8-719-107-94	DIODE 1SS202-1
D820	8-719-107-94	DIODE 1SS202-1
D821	8-719-107-94	DIODE 1SS202-1
D822	8-719-107-94	DIODE 1SS202-1
D823	8-719-107-94	DIODE 1SS202-1
D824	8-719-107-94	DIODE 1SS202-1
D825	8-719-107-94	DIODE 1SS202-1
D826	8-719-902-78	DIODE SLR-34DC5
D827	8-719-934-05	DIODE SLR-34URC5
D828	8-719-902-77	DIODE SLR-34PC5
D829	8-719-902-77	DIODE SLR-34PC5
D830	8-719-902-77	DIODE SLR-34PC5
D831	8-719-906-46	DIODE SLR34YC5
D832	8-719-906-46	DIODE SLR34YC5
D833	8-719-902-77	DIODE SLR-34PC5
D834	8-719-902-77	DIODE SLR-34PC5
D835	8-719-902-77	DIODE SLR-34PC5
D836	8-719-902-77	DIODE SLR-34PC5
D837	8-719-906-46	DIODE SLR34YC5
D838	8-719-107-94	DIODE 1SS202-1
D901	8-719-107-94	DIODE 1SS202-1
D902	8-719-902-77	DIODE SLR-34PC5
D1001	8-719-200-02	DIODE 10E-2
D1002	8-719-200-02	DIODE 10E-2
D1003	8-719-107-94	DIODE 1SS202-1
D1004	8-719-107-94	DIODE 1SS202-1
D1005	8-719-107-94	DIODE 1SS202-1
	.1-532-570-00 .1-532-285-00	(US)FUSE, GLASS TUBE (AEP,G-AEP,E2/3)FUSE, TIME-LAG
F2 <u>∧</u> F2 ∧	.1-532-570-00 .1-532-285-00	(US)FUSE, GLASS TUBE (AEP,G-AEP,E2/3)FUSE, TIME-LAG
FL	1-519-309-00	INDICATOR TUBE, FLUORESCENT
IC101 IC102 IC201	8-752-002-80 8-759-600-02 8-752-002-70	IC CX20028 IC M5218L IC CX20027

#### NOTE

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#### CAPACITORS:

All capacitors are in µF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:µF, PF:µµF.

#### COILS

· MMH : mH, UH : աH

#### SEMICONDUCTORS

In each case, U : μ, for example: UA···: μΑ···, UPA···: μΡΑ···, UPC···: μPC, UPD···: μPD··· The components identified by shading and mark Aare critical for safety.

Replace only with part number specified.

Ref.No.	Part No.	Description
IC202	8-759-600-02	IC M5218L
IC301	8-759-101-56	IC CX10033A
IC302	8-759-101-55	IC CX10032A
IC303	8-757-919-10	IC CX-7919A
IC304	8-759-961-38	IC BA6138
IC305	8-759-700-47	IC CX10035
IC306	8-759-600-02	IC M5218L
IC307	8-759-745-60	IC NJM4560D
IC308	8-759-600-02	IC M5218L
IC501	8-759-201-90	IC TMP47C40P-6302
IC502	8-755-650-31	IC CX565-031
IC503	8-759-700-48	IC NJM2903S
IC504	8-759-240-66	IC TC4066BP
IC505	8-759-240-66	IC TC4066BP
IC506	8-759-700-46	IC CX10034
IC507	8-759-240-69	IC TC4069UBP
IC508	8-759-240-69	IC TC4069UBP
IC509	8-759-240-69	IC TC4069UBP
IC701	8-759-240-69	IC TC4069UBP
IC801	8-759-201-91	IC TMP4720N-1008
IC802	8-759-904-72	IC MSL9359RS
IC803	8-759-800-76	IC LB1245
IC804	8-759-800-76	IC LB1245
IC805	8-759-800-80	IC LB1200
J101 J102 J103	1-507-797-21 1-507-908-11 1-507-908-11	JACK, LARGE TYPE (L-MIC) JACK, PIN 4P (L-LINE IN) JACK, PIN 4P (L-LINE OUT)
J201 J202 J203 J301	1-507-797-21 1-507-908-11 1-507-908-11 1-507-796-21	JACK, LARGE TYPE (R-MIC) JACK, PIN 4P (R-LINE IN) JACK, PIN 4P (R-LINE OUT) JACK (HEADPHONES)
L101	1-408-930-00	MICRO INDUCTOR 33MMH
L102	1-408-923-00	MICRO INDUCTOR 8.2MMH
L103	1-408-923-00	MICRO INDUCTOR 8.2MMH
L104	1-408-923-00	MICRO INDUCTOR 8.2MMH
L105	1-408-929-00	MICRO INDUCTOR 27MMH
L106	1-408-253-00	MICRO INDUCTOR 4.7MMH
L201	1-408-930-00	MICRO INDUCTOR 33MMH
L202	1-408-923-00	MICRO INDUCTOR 8.2MMH
L203	1-408-923-00	MICRO INDUCTOR 8.2MMH
L204	1-408-923-00	MICRO INDUCTOR 8.2MMH
L205	1-408-929-00	MICRO INDUCTOR 27MMH
L206	1-408-253-00	MICRO INDUCTOR 4.7MMH
L501	1-408-080-00	MICRO INDUCTOR 100UH
L502	1-408-080-00	MICRO INDUCTOR 100UH
LPF101	1-235-099-00	FILTER, LOW PASS
LPF201	1-235-099-00	FILTER, LOW PASS

#### ELECTRICAL PARTS

Ref.No.	Part No.	Description
M1001 M1002	1-541-239-00	MOTOR INCLUDED IN (438)
PL1002	1-518-340-71 1-518-548-11 1-518-548-11	LAMP, PILOT (CASSETTE THROUGH) LAMP, PILOT (DIR, FWD) LAMP, PILOT (DIR, REV)
PM1002	1-454-333-00 1-454-291-00 1-454-363-00	SOLENOID, PLUNGER (HEAD) SOLENOID, PLUNGER (AMS) SOLENOID, PLUNGER (DIR)
PS301 PS302 PS501 PS504	1-532-605-00 1-532-605-00 1-532-605-00 1-532-605-00	LINK, IC LINK, IC LINK, IC LINK, IC
PT 🔬	.1-447-818-11 .1-447-819-11 .1-447-820-11	(US)TRANSFORMER, POWER (E2/3)TRANSFORMER, POWER (AEP,G-AEP)TRANSFORMER, POWER
Q101 Q102 Q201	8-729-102-03 8-729-102-03 8-729-102-03	TRANSISTOR 2SD1020 TRANSISTOR 2SD1020 TRANSISTOR 2SD1020
Q202 Q301 Q302	8-729-102-03 8-729-180-93 8-729-173-13	TRANSISTOR 2SD1020 TRANSISTOR 2SD809 TRANSISTOR 2SB731
Q303 Q304 Q305	8-729-180-93 8-729-173-13 8-729-245-83	TRANSISTOR 2SD809 TRANSISTOR 2SB731 TRANSISTOR 2SC2458
Q306 Q307 Q308	8-729-245-83 8-729-178-54 8-729-178-54	TRANSISTOR 2SC2458 TRANSISTOR 2SC2785 TRANSISTOR 2SC2785
Q309 Q310 Q311	8-729-178-54 8-729-245-83 8-729-900-63	TRANSISTOR 2SC2785 TRANSISTOR 2SC2458 TRANSISTOR DTA124ES
Q501 Q502 Q503	8-729-201-78 8-729-201-78 8-729-201-78	TRANSISTOR 2SD1406 TRANSISTOR 2SD1406 TRANSISTOR 2SD1406
Q505 Q506 Q507	8-729-180-93 8-729-245-83 8-729-245-83	TRANSISTOR 2SD809 TRANSISTOR 2SC2458 TRANSISTOR 2SC2458
Q508 Q509 Q510	8-729-245-83 8-729-245-83 8-729-245-83	TRANSISTOR 2SC2458 TRANSISTOR 2SC2458 TRANSISTOR 2SC2458
Q511 Q512 Q513	8-729-900-37 8-729-900-37 8-729-900-37	TRANSISTOR DTC124EF TRANSISTOR DTC124EF TRANSISTOR DTC124EF
Q514 Q515 Q516	8-729-900-63 8-729-900-63 8-729-900-63	TRANSISTOR DTA124ES TRANSISTOR DTA124ES TRANSISTOR DTA124ES

# NOTE:

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#### CAPACITORS:

All capacitors are in µF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:µF, PF:µµF.

#### COILS

 $^{\circ}$  MMH : mH, UH :  $\mu H$ 

# SEMICONDUCTORS

In each case, U : μ, for example: UA···: μΑ···, UPA···: μΡΑ···, UPC···: μΡC, UPD···: μΡD··· The components identified by shading and mark Aare critical for safety.

Replace only with part number specified.

	ELECTRIC	AL PARTS					ELECTRIC	AL PARTS			
Ref.No.	Part No.	Description				Ref.No.	Part No.	Description			
Q517 Q520 Q521	8-729-900-63 8-729-900-63 8-729-195-23	TRANSISTOR DTA124ES TRANSISTOR DTA124ES TRANSISTOR 2SA952				R113 R114 R115	1-246-524-00 1-246-490-00 1-246-504-00	CARBON CARBON CARBON	130K 5.1K 20K	5% 5% 5%	1/4W 1/4W 1/4W
Q522 Q523 Q524	8-729-195-23 8-729-102-03 8-729-102-03	TRANSISTOR 2SA952 TRANSISTOR 2SD1020 TRANSISTOR 2SD1020				R116 R117 R118	1-246-530-00 1-246-499-00 1-247-155-00	CARBON CARBON CARBON	240K 12K 10K	5% 5% 5%	1/4W 1/4W 1/4W
Q525 Q526 Q527	8-729-900-63 8-729-900-37 8-729-180-93	TRANSISTOR DTA124E TRANSISTOR DTC124EF TRANSISTOR 2SD809				R121 R122 R123	1-247-831-00 1-246-466-00 1-214-731-00	CARBON CARBON METAL	1K 510 1.2K	5% 5% 1%	1/6W 1/4W 1/4W
Q529 Q530 Q531	8-729-374-02 8-729-374-02 8-729-177-43	TRANSISTOR 2SB740 TRANSISTOR 2SB740 TRANSISTOR 2SD774				R124 R125 R126	1-247-886-00 1-247-888-00 1-247-887-00	CARBON CARBON CARBON	200K 240K 220K	5% 5% 5%	1/6W 1/6W 1/6W
Q532 Q533 Q534	8-729-177-43 8-729-900-37 8-729-900-37	TRANSISTOR 2SD774 TRANSISTOR DTC124EF TRANSISTOR DTC124EF				R127 R128 R129	1-247-845-00 1-247-886-00 1-247-887-00	CARBON CARBON CARBON	3.9K 200K 220K	5% 5% 5%	1/6W 1/6W 1/6W
Q535 Q536 Q537	8-729-900-63 8-729-900-63 8-729-900-63	TRANSISTOR DTA124ES TRANSISTOR DTA124ES TRANSISTOR DTA124ES				R130 R131 R132	1-214-753-00 1-247-820-00 1-247-845-00	METAL CARBON CARBON	10K 360 3.9K	1% 5% 5%	1/4W 1/6W 1/6W
Q538 Q701 Q702	8-729-900-63 8-729-177-43 8-729-900-63	TRANSISTOR DTA124ES TRANSISTOR 2SD774 TRANSISTOR DTA124ES				R133 R134 R135	1-246-490-00 1-246-480-00 1-247-171-00	CARBON CARBON CARBON	5.1K 2K 47K	5% 5% 5%	1/4W 1/4W 1/4W
Q703 Q704 Q705	8-729-245-83 8-729-245-83 8-729-245-83	TRANSISTOR 2SC2458 TRANSISTOR 2SC2458 TRANSISTOR 2SC2458			,	R136 R137 R138	1-214-776-00 1-247-149-00 1-246-483-00	METAL CARBON CARBON	91K 5.6K 2.7K	1% 5% 5%	1/4W 1/4W 1/4W
Q706 Q707 Q801	8-729-900-37 8-729-900-37 8-729-900-63	TRANSISTOR DTC124EF TRANSISTOR DTC124EF TRANSISTOR DTA124ES				R139 R140 R141	1-246-537-00 1-214-763-00 1-246-466-00	METAL	470K 27K 510	5% 1% 5%	1/4W 1/4W 1/4W
Q802 Q803 Q804	8-729-900-63 8-729-900-63 8-729-900-63				-	R142 R143 R151	1-214-729-00 1-247-139-00 1-247-155-00	CARBON	1K 2.2K 10K	1% 5% 5%	1/4W 1/4W 1/4W
Q805 Q1001 Q1002 01003	8-729-101-02	TRANSISTOR PH102 TRANSISTOR PH102				R152 R153 R154	1-247-147-00 1-247-139-00 1-247-155-00	CARBON	4.7K 2.2K 10K	5% 5% 5%	1/4W 1/4W 1/4W
R101 R102 R103	1-246-506-00 1-246-512-00 1-247-155-00	CARBON 24K CARBON 43K	5% 5% 5%	1/4W 1/4W 1/4W		R155 R156 R157	1-247-831-00 1-246-529-00 1-246-478-00	CARBON CARBON	1K 220K 1.6K	5% 5% 5%	1/6W 1/4W 1/4W
R104 R105 R106	1-247-115-00 1-247-167-00 1-246-537-00	CARBON 33K	5% 5% 5%	1/4W 1/4W 1/4W		R158 R159 R160	1-247-159-00 1-247-857-00 1-247-807-00	CARBON CARBON	15K 12K 100	5% 5% 5%	1/4W 1/6W 1/6W
R107 R108 R109	1-246-485-00 1-246-545-00 1-247-151-00	CARBON 1M	5% 5% 5%	1/4W 1/4W 1/4W		R161 R162 R163	1-247-852-00 1-247-791-00 1-247-848-00	CARBON CARBON	7.5K 22 5.1K		1/6W 1/6W 1/6W
R110 R111 R112	1-247-119-00 1-247-165-00 1-247-107-00	CARBON 27K	5% 5% 5%	1/4W 1/4W 1/4W	-	R164 R165 R166	1-247-857-00 1-247-791-00 1-247-838-00	CARBON	12K 22 2K	5% 5% 5%	1/6W 1/6W 1/6W

# NOTE:

### CAPACITORS:

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# COILS

- MMH : mH, UH :  $\mu H$ 

# SEMICONDUCTORS

In each case, U : μ, for example: UA···: μΑ···, UPA···: μΡΑ···, UPC···: μΡC,

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ELECTRIC	AL	P	AR	Ţ	S	

Ref.No.	Part No.	Description				Ref.No.	Part No.	Description			
R167	1-247-843-00	CARBON	3.3K	5%	1/6W	R224	1-247-886-00	CARBON	200K	5%	1/6W
R168	1-247-841-00	CARBON	2.7K	5%	1/6W	R225	1-247-888-00	CARBON	240K	5%	1/6W
R169	1-247-815-00	CARBON	220	5%	1/6W	R226	1-247-887-00	CARBON	220K	5%	1/6W
R170	1-247-864-00	CARBON	24K	5%	1/6W	R227	1-247-845-00	CARBON	3.9K	5%	1/6W
R171	1-247-891-00	CARBON	330K	5%	1/6W	R228	1-247-886-00	CARBON	200K	5%	1/6W
R172	1-247-139-00	CARBON	2.2K	5%	1/4W	R229	1-247-887-00	CARBON	220K	5%	1/6W
R176	1-247-155-00	CARBON	10K	5%	1/4W	R230	1-214-753-00	METAL	10K	1%	1/4W
R177	1-247-867-00	CARBON	33K	5%	1/6W	R231	1-247-820-00	CARBON	360	5%	1/6W
R178	1-246-529-00	CARBON	220K	5%	1/4W	R232	1-247-845-00	CARBON	3.9K	5%	1/6W
R179	1-247-167-00	CARBON	33K	5%	1/4W	R233	1-246-490-00	CARBON	5.1K	5%	1/4W
R180	1-247-179-00	CARBON	100K	5%	1/4W	R234	1-246-480-00	CARBON	2K	5%	1/4W
R181	1-247-107-00	CARBON	100	5%	1/4W	R235	1-247-171-00	CARBON	47K	5%	1/4W
R182	1-247-155-00	CARBON	10K	5%	1/4W	R236	1-214-776-00	METAL	91K	1%	1/4W
R183	1-247-871-00	CARBON	47K	5%	1/6W	R237	1-247-149-00	CARBON	5.6K	5%	1/4W
R184	1-247-857-00	CARBON	12K	5%	1/6W	R238	1-246-483-00	CARBON	2.7K	5%	1/4W
R185	1-247-791-00	CARBON	22	5%	1/6W	R239	1-246-537-00	CARBON	470K	5%	1/4W
R186	1-247-891-00	CARBON	330K	5%	1/6W	R240	1-214-763-00	METAL	27K	1%	1/4W
R187	1-247-119-00	CARBON	330	5%	1/4W	R241	1-246-466-00	CARBON	510	5%	1/4W
R189	1-247-879-00	CARBON	100K	5%	1/6W	R242	1-214-729-00	METAL	1K	1%	1/4W
R191	1-214-777-00	METAL	100K	1%	1/4W	R243	1-247-139-00	CARBON	2.2K	5%	1/4W
R192	1-214-785-00	METAL	220K	1%	1/4W	R251	1-247-155-00	CARBON	10K	5%	1/4W
R193	1-214-735-00	METAL	1.8K	1%	1/4W	R252	1-247-147-00	CARBON	4.7K	5%	1/4W
R194	1-214-744-00	METAL	4.3K	1%	1/4W	R253	1-247-139-00	CARBON	2.2K	5%	1/4W
R195	1-247-902-00	CARBON	910K	5%	1/6W	R254	1-247-155-00	CARBON	10K	5%	1/4W
R201	1-246-506-00	CARBON	24K	5%	1/4W	R255	1-247-831-00	CARBON	1K	5%	1/6W
R202	1-246-512-00	CARBON	43K	5%	1/4W	R256	1-246-529-00	CARBON	220K	5%	1/4W
R203	1-247-155-00	CARBON	10K	5%	1/4W	R257	1-246-478-00	CARBON	1.6K	5%	1/4W
R204	1-247-115-00	CARBON	220	5%	1/4W	R258	1-247-159-00	CARBON	15K	5%	1/4W
R205	1-247-167-00	CARBON	33K	5%	1/4W	R259	1-247-857-00	CARBON	12K	5%	1/6W
R206	1-246-537-00	CARBON	470K	5%	1/4W	R260	1-247-807-00	CARBON	100	5%	1/6W
R207	1-246-485-00	CARBON	3.3K	5%	1/4W	R261	1-247-852-00	CARBON	7.5K	5%	1/6W
R208	1-246-545-00	CARBON	1M	5%	1/4W	R262	1-247-791-00	CARBON	22	5%	1/6W
R209	1-247-151-00	CARBON	6.8K	5%	1/4W	R263	1-247-848-00	CARBON	5.1K	5%	1/6W
R210	1-247-119-00	CARBON	330	5%	1/4W	R264	1-247-857-00	CARBON	12K	5%	1/6W
R211	1-247-165-00	CARBON	27 K	5%	1/4W	R265	1-247-791-00	CARBON	22	5%	1/6W
R212	1-247-107-00	CARBON	100	5%	1/4W	R266	1-247-838-00	CARBON	2K	5%	1/6W
R213	1-246-524-00	CARBON	130K	5%	1/4W	R267	1-247-843-00	CARBON	3.3K	5%	1/6W
R214	1-246-490-00	CARBON	5.1K	5%	1/4W	R268	1-247-841-00	CARBON	2.7K	5%	1/6W
R215	1-246-504-00	CARBON	20K	5%	1/4W	R269	1-247-815-00	CARBON	220	5%	1/6W
R216	1-246-530-00	CARBON	240K	5%	1/4W	R270	1-247-864-00	CARBON	24K	5%	1/6W
R217	1-246-499-00	CARBON	12K	5%	1/4W	R271	1-247-891-00	CARBON	330K	5%	1/6W
R218	1-247-155-00	CARBON	10K	5%	1/4W	R272	1-247-139-00	CARBON	2.2K	5%	1/4W
R221	1-247-831-00	CARBON	1K	5%	1/6W	R276	1-247-155-00	CARBON	10K	5%	1/4W
R222	1-246-466-00	CARBON	510	5%	1/4W	R277	1-247-867-00	CARBON	33K	5%	1/6W
R223	1-214-731-00	METAL	1.2K	1%	1/4W	R278	1-246-529-00	CARBON	220K	5%	1/4W

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#### COILS

· MMH : mH, UH : դH

# SEMICONDUCTORS

In each case,  $U: \mu$ , for example:  $UA\cdots: \mu A\cdots$ ,  $UPA\cdots: \mu PA\cdots$ ,  $UPC\cdots: \mu PC$ ,

 $\text{UPD}\cdots:\ \mu\text{PD}\cdots$ 

Ref.No.	Part No.	Description				Ref.No.	Part No.	Description			
R279	1-247-167-00	CARBON	33K	5%	1/4W	R344	1-247-871-00	CARBON	47K	5%	1/6W
R280	1-247-179-00	CARBON	100K	5%	1/4W	R501	1-247-147-00	CARBON	4.7K	5%	1/4W
R281	1-247-107-00	CARBON	100	5%	1/4W	R502	1-247-107-00	CARBON	100	5%	1/4W
R282	1-247-155-00	CARBON	10K	5%	1/4W	R503	1-247-171-00	CARBON	47K	5%	1/4W
R283	1-247-871-00	CARBON	47K	5%	1/6W	R505	1-247-131-00	CARBON	1K	5%	1/4W
R284	1-247-857-00	CARBON	12K	5%	1/6W	R506 <u>A</u>	.1-212-849-00	FUSIBLE	4.7	5%	1/4W F
R285	1-247-791-00	CARBON	22	5%	1/6W	R507	1-247-131-00	CARBON	1K	5%	1/4W
R286	1-247-891-00	CARBON	330K	5%	1/6W	R508 ∕∆	.1-212-956-00	FUSIBLE	8.2	5%	1/2W F
R287	1-247-119-00	CARBON	330	5%	1/4W	R509	1-247-145-00	CARBON	3.9K	5%	1/4W
R289	1-247-879-00	CARBON	100K	5%	1/6W	R510 <u>A</u>	.1-212-956-00	FUSIBLE	8.2	5%	1/2W F
R291	1-214-777-00	METAL	100K	1%	1/4W	R511	1-247-131-00	CARBON	1K	5%	1/4W
R292	1-214-785-00	METAL	220K	1%	1/4W	R513	1-247-155-00	CARBON	10K	5%	1/4W
R293	1-214-735-00	METAL	1.8K	1%	1/4W	R514	1-214-753-00	METAL	10K	1%	1/4W
R294	1-214-744-00	METAL	4.3K	1%	1/4W	R515	1-214-154-00	METAL	8.2K	1%	1/4W
R295	1-247-902-00	CARBON	910K	5%	1/6W	R516	1-214-754-00	METAL	11K	1%	1/4W
R301	1-246-482-00	CARBON	2.4K	5%	1/4W	R517	1-247-167-00	CARBON	33K	5%	1/4W
R302	1-246-499-00	CARBON	12K	5%	1/4W	R518	1-247-145-00	CARBON	3.9K	5%	1/4W
R303	1-247-139-00	CARBON	2.2K	5%	1/4W	R519	1-246-505-00	CARBON	22K	5%	1/4W
R304	1-246-500-00	CARBON	13K	5%	1/4W	R520	1-247-147-00	CARBON	4.7K	5%	1/4W
R305	1-247-855-00	CARBON	10K	5%	1/6W	R521	1-247-155-00	CARBON	10K	5%	1/4W
R306	1-247-831-00	CARBON	1K	5%	1/6W	R524	1-247-147-00	CARBON	4.7K	5%	1/4W
R307	1-247-838-00	CARBON	2K	5%	1/6W	R525	1-247-147-00	CARBON	4.7K	5%	1/4W
R308	1-247-863-00	CARBON	22K	5%	1/6W	R526	1-247-167-00	CARBON	33K	5%	1/4W
R309	1-247-843-00	CARBON	3.3K	5%	1/6W	R527	1-246-511-00	CARBON	39K	5%	1/4W
R311	1-247-845-00	CARBON	3.9K	5%	1/6W	R528	1-246-455-00	CARBON	180	5%	1/4W
R312	1-247-855-00	CARBON	10K	5%	1/6W	R529	1-246-545-00	CARBON	1M	5%	1/4W
R313	1-247-855-00	CARBON	10K	5%	1/6W	R530	1-246-500-00	CARBON	13K	5%	1/4W
R315	1-247-873-00	CARBON	56K	5%	1/6W	R531	1-246-500-00	CARBON	13K	5%	1/4W
R316	1-247-873-00	CARBON	56K	5%	1/6W	R532	1-246-500-00	CARBON	13K	5%	1/4W
R317	1-217-527-00	FUSIBLE	22	5%	1/4W	R533	1-246-505-00	CARBON	22K	5%	1/4W
R324	1-247-848-00	CARBON	5.1K	5%	1/6W	R534	1-246-505-00	CARBON	22K	5%	1/4W
R325	1-247-848-00	CARBON	5.1K	5%	1/6W	R535	1-246-505-00	CARBON	22K	5%	1/4W
R326	1-247-848-00	CARBON	5.1K	5%	1/6W	R536	1-246-505-00	CARBON	22K	5%	1/4W
R327	1-247-845-00	CARBON	3.9K	5%	1/6W	R537	1-246-505-00	CARBON	22K	5%	1/4W
R328	1-247-823-00	CARBON	470	5%	1/6W	R538	1-246-505-00	CARBON	22K	5%	1/4W
R331	1-247-115-00	CARBON	220	5%	1/4W	R539	1-246-505-00	CARBON	22K	5%	1/4W
R332	1-247-115-00	CARBON	220	5%	1/4W	R540	1-246-505-00	CARBON	22K	5%	1/4W
R336	1-247-843-00	CARBON	3.3K	5%	1/6W	R541	1-246-505-00	CARBON	22K	5%	1/4W
R337	1-247-847-00	CARBON	4.7K	5%	1/6W	R542	1-246-505-00	CARBON	22K	5%	1/4W
R338	1-247-875-00	CARBON	68K	5%	1/6W	R543	1-246-505-00	CARBON	22K	5%	1/4W
R339	1-247-831-00	CARBON	1K	5%	1/6W	R544	1-246-505-00	CARBON	22K	5%	1/4W
R340	1-247-831-00	CARBON	1Ķ	5%	1/6W	R545	1-246-505-00	CARBON	22K	5%	1/4W
R341	1-247-831-00	CARBON	1K	5%	1/6W	R546	1-246-505-00	CARBON	22K	5%	1/4W
R342	1-247-847-00	CARBON	4.7K	5%	1/6W	R547	1-246-505-00	CARBON	22K	5%	1/4W
R343	1-247-847-00	CARBON	4.7K	5%	1/6W	R548	1-246-505-00	CARBON	22K	5%	1/4W

ELECTRICAL PARTS

- · The mechanical parts with no reference number in the exploded views are not
- Items marked " " are not stocked since they are seldom required for routine service. Some delay should be antici-pated when ordering these items.
- Due to standardization, parts with part numbers ( $\Delta-\Delta\Delta\Delta-\Delta\Delta\Delta-XX$  or  $\Delta-\Delta\Delta\Delta\Delta-\Delta\Delta\Delta-X$ ) may be different from those used in the
- $\cdot$  If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

## CAPACITORS:

All capacitors are in µF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:µF, PF:µµF.

#### COILS

· MMH : mH, UH : μH

## SEMICONDUCTORS

In each case, U : μ, for example: UA···: μΑ···, UPA···: μΡΑ···, UPC···: μΡC,

 $\text{UPD}\cdots:\ \mu\text{PD}\cdots$ 

The components identified by shading and mark A are critical for safety.
Replace only with part number specified.

	ELECTRIC	AL PARTS					ELECTRIC	AL PARTS			
Ref.No.	Part No.	Description				Ref.No.	Part No.	Description			
R549	1-246-505-00	CARBON	22K	5%	1/4W	R602	1-214-729-00	METAL	1K	1%	1/4W
R550	1-247-115-00	CARBON	220	5%	1/4W	R605	1-246-505-00	CARBON	22K	5%	1/4W
R551	1-247-115-00	CARBON	220	5%	1/4W	R606	1-246-492-00	CARBON	6.2K	5%	1/4W
R552	1-247-115-00	CARBON	220	5%	1/4W	R607	1-247-155-00	CARBON	10K	5%	1/4W
R553	1-247-115-00	CARBON	220	5%	1/4W	R608	1-247-179-00	CARBON	100K	5%	1/4W
R554	1-247-115-00	CARBON	220	5%	1/4W	R609	1-246-502-00	CARBON	16K	5%	1/4W
R555	1-247-115-00	CARBON	220	5%	1/4W	R611	1-247-147-00	CARBON	4.7K	5%	1/4W
R556	1-247-115-00	CARBON	220	5%	1/4W	R613	1-247-783-00	CARBON	10	5%	1/6W
R557	1-247-147-00	CARBON	4.7K	5%	1/4W	R701	1-247-115-00	CARBON	220	5%	1/4W
R558	1-247-147-00	CARBON	4.7K	5%	1/4W	R702	1-247-131-00	CARBON	1K	5%	1/4W
R559	1-247-147-00	CARBON	4.7K	5%	1/4W	R703	1-247-155-00	CARBON	10K	5%	1/4W
R560	1-247-147-00	CARBON	4.7K	5%	1/4W	R704	1-246-452-00	CARBON	130	5%	1/4W
R561	1-247-131-00	CARBON	1K	5%	1/4W	R705	1-247-149-00	CARBON	5.6K	5%	1/4W
R563	1-247-171-00	CARBON	47K	5%	1/4W	R706	1-246-495-00	CARBON	8.2K	5%	1/4W
R566	1-247-131-00	CARBON	1K	5%	1/4W	R707	1-247-155-00	CARBON	10K	5%	1/4W
R567	1-247-155-00	CARBON	10K	5%	1/4W	R708	1-247-155-00	CARBON	10K	5%	1/4W
R568	1-247-155-00	CARBON	10K	5%	1/4W	R709	1-246-514-00	CARBON	51K	5%	1/4W
R569	1-247-155-00	CARBON	10K	5%	1/4W	R710	1-246-514-00	CARBON	51K	5%	1/4W
R570	1-247-131-00	CARBON	1K	5%	1/4W	R711	1-247-147-00	CARBON	4.7K	5%	1/4W
R571	1-247-131-00	CARBON	1K	5%	1/4W	R712	1-247-155-00	CARBON	10K	5%	1/4W
R572	1-247-131-00	CARBON	1K	5%	1/4W	R713	1-247-171-00	CARBON	47K	5%	1/4W
R573	1-247-155-00	CARBON	10K	5%	1/4W	R714	1-247-131-00	CARBON	1K	5%	1/4W
R574	1-247-119-00	CARBON	330	5%	1/4W	R715	1-247-131-00	CARBON	1K	5%	1/4W
R575	1-246-468-00	CARBON	620	5%	1/4W	R716	1-247-171-00	CARBON	47K	5%	1/4W
R576	1-247-131-00	CARBON	1K	5%	1/4W	R717	1-246-529-00	CARBON	220K	5%	1/4W
R578	1-247-179-00	CARBON	100K	5%	1/4W	R718	1-246-505-00	CARBON	22K	5%	1/4W
R579	1-247-131-00	CARBON	1K	5%	1/4W	R719	1-246-529-00	CARBON	220K	5%	1/4W
R580	1-247-155-00	CARBON	10K	5%	1/4W	R720	1-247-159-00	CARBON	15K	5%	1/4W
R581	1-247-171-00	CARBON	47K	5%	1/4W	R721	1-247-159-00	CARBON	15K	5%	1/4W
R582	1-247-131-00	CARBON	1K	5%	1/4W	R722	1-247-147-00	CARBON	4.7K	5%	1/4W
R583 <u>/</u>	1-206-473-00	METAL OXIDE	27	5%	2W F	R723	1-247-131-00	CARBON	1K	5%	1/4W
R585	1-247-179-00	CARBON	100K	5%	1/4W	R805	1-247-875-00	CARBON	68K	5%	1/6W
R586	1-247-131-00	CARBON	1K	5%	1/4W	R806	1-247-875-00	CARBON	68K	5%	1/6W
R587	1-247-155-00	CARBON	10K	5%	1/4W	R807	1-246-458-00	CARBON	240	5%	1/4W
R588	1-247-171-00	CARBON	47K	5%	1/4W	R808	1-247-895-00	CARBON	470K	5%	1/6W
R589	1-247-131-00	CARBON	1K	5%	1/4W	R809	1-247-872-00	CARBON	51K	5%	1/6W
R590	1-247-107-00	CARBON	100	5%	1/4W	R810	1-247-872-00	CARBON	51K	5%	1/6W
R591	1-247-107-00	CARBON	100	5%	1/4W	R811	1-247-861-00	CARBON	18K	5%	1/6W
R592	1-246-531-00	CARBON	270K	5%	1/4W	R812	1-247-847-00	CARBON	4.7K	5%	1/6W
R593	1-246-531-00	CARBON	270K	5%	1/4W	R813	1-247-863-00	CARBON	22K	5%	1/6W
R594	1-247-171-00	CARBON	47K	5%	1/4W	R814	1-247-863-00	CARBON	22K	5%	1/6W
R595	1-247-171-00	CARBON	47K	5%	1/4W	R815	1-247-863-00	CARBON	22K	5%	1/6W
R596	1-246-505-00	CARBON	22K	5%	1/4W	R816	1-247-863-00	CARBON	22K	5%	1/6W
R600	1-247-155-00	CARBON	10K	5%	1/4W	R817	1-247-863-00	CARBON	22K	5%	1/6W
R601	1-247-123-00	CARBON	470	5%	1/4W	R818	1-247-863-00	CARBON	22K	5%	1/6W

#### NOTE:

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- . Due to standardization, parts with part numbers ( $\Delta-\Delta\Delta\Delta-\Delta\Delta\Delta-XX$  or  $\Delta-\Delta\Delta\Delta\Delta-\Delta\Delta\Delta-X$ ) may be different from those used in the set.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

#### CAPACITORS:

All capacitors are in µF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:µF, PF:µµF.

R819

1-246-443-00 CARBON

# COILS

· MMH : mH, UH : բH

### SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μΑ···, UPA···: μΡΑ···, UPC···: μPC,
UPD···: μPD···

The components identified by shading and mark A are critical for safety.
Replace only with part number specified.

1/4W

Ref.No.	Part No.	Description
R820	1-246-443-00	CARBON 56 5% 1/4W
R821	1-247-863-00	CARBON 22K 5% 1/6W
- 882Z <u>W</u>	.1-202-862-00	-SOL1D 220 1/4W F
RV101	1-228-542-00	RES, ADJ, METAL GLAZE 10K
RV102	1-228-542-00	RES, ADJ, METAL GLAZE 10K
RV103	1-226-236-00	RES, ADJ, CARBON 10K
RV201	1-228-542-00	RES, ADJ, METAL GLAZE 10K
RV202	1-228-542-00	RES, ADJ, METAL GLAZE 10K
RV203	1-226-236-00	RES, ADJ, CARBON 10K
RV701	1-226-236-00	RES, ADJ, CARBON 10K
RY1	1-515-323-00	RELAY
	.1-553-318-00	SWITCH, PUSH (AC POWER)(1 KEY)
S601 S701	1-554-208-00 1-554-649-00	SWITCH, SLIDE (TIMER) SWITCH, PUSH (4 KEY)(REV MODE)
\$702	1-554-649-00	SWITCH, PUSH (4 KEY)(REV MODE)
\$703	1-554-649-00	SWITCH, PUSH (4 KEY)(REV MODE)
\$704	1-554-649-00	SWITCH, PUSH (4 KEY)(REV MODE)
\$802	1-554-303-00	SWITCH, KEY BOARD
\$803	1-554-303-00	SWITCH, KEY BOARD
\$804	1-554-303-00	SWITCH, KEY BOARD
\$805	1-554-303-00	SWITCH, KEY BOARD
\$806	1-554-303-00	SWITCH, KEY BOARD
\$807	1-554-303-00	SWITCH, KEY BOARD
\$808	1-554-303-00	SWITCH, KEY BOARD
\$809	1-554-303-00	SWITCH, KEY BOARD
\$810	1-554-303-00	SWITCH, KEY BOARD
\$811	1-554-303-00	SWITCH, KEY BOARD
\$812	1-554-303-00	SWITCH, KEY BOARD
\$813	1-554-303-00	SWITCH, KEY BOARD
\$814	1-554-303-00	SWITCH, KEY BOARD
\$815	1-554-303-00	SWITCH, KEY BOARD
\$816	1-554-303-00	SWITCH, KEY BOARD
\$817	1-554-303-00	SWITCH, KEY BOARD
\$818	1-554-303-00	SWITCH, KEY BOARD
\$819	1-554-303-00	SWITCH, KEY BOARD
\$820	1-554-303-00	SWITCH, KEY BOARD
\$821	1-554-303-00	SWITCH, KEY BOARD
\$822	1-554-303-00	SWITCH, KEY BOARD
\$823	1-554-303-00	SWITCH, KEY BOARD
\$824	1-554-303-00	SWITCH, KEY BOARD
\$825	1-554-303-00	SWITCH, KEY BOARD

# ELECTRICAL PARTS

Ref.No.	Part No.	Description
\$1001	1-554-303-00 1-554-205-00 1-554-205-00	SWITCH, KEY BOARD SWITCH, PUSH (LEVER DET) SWITCH, PUSH (LEVER DET)
S1004 S1005	1-554-205-00 1-554-205-00 1-554-205-00 1-516-323-XX	SWITCH, PUSH (LEVER DET) SWITCH, PUSH (LEVER DET) SWITCH, PUSH (LEVER DET) SLIDE SWITCH (DIR)
	1-235-186-00 1-235-186-00	ENCAPSULATED COMPONENT ENCAPSULATED COMPONENT
T301 1	1-433-277-00	TRANSFORMER, BIAS OSCILLATOR
X501	1-567-160-00	OSCILLATOR, CERAMIC

#### NOTE:

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- · Due to standardization, parts with part numbers ( $\Delta$ - $\Delta\Delta\Delta$ - $\Delta\Delta\Delta$ - $\DeltaX$ ) or  $\Delta$ - $\Delta\Delta\Delta\Delta$ - $\Delta\Delta\Delta$ - $\DeltaX$ ) may be different from those used in the set
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

# CAPACITORS:

All capacitors are in  $\mu F$ . Common capacitors are omitted. Refer to the following lists for their part numbers. MF:  $\mu F$ , PF:  $\mu \mu F$ .

### COILS

· MMH : mH, UH : µH

#### SEMICONDUCTORS

In each case, U : μ, for example: UA···: μΑ···, UPA···: μΡΑ···, UPC···: μPC, UPD···: μPD··· The components identified by shading and mark A are critical for safety.

Replace only with part number specified.

# **Technik als Verkaufsargument**

Produktart:

HIFI / TC

#### тс-ғхлолк

#### QUICK-REVERSE-SYSTEM

Unter der Typenbezeichnung TC-FX-707R bietet Sony ein HiFi- Cassettendeck mit Reverse-Funktion für Aufnahme und Wiedergabe an. Neben vielen Ausstattungsmerkmalen für die neueste und hochwertigste Technik eingesetzt wird wie z.B.

- Memory-Funktionen zum Abspeichern von Aufnahme- bzw Wiedergabeeinstellungen (z.B. Bandart, Line Out Pegel usw.)
- Fader-Funktion zum weichen Ein- und Ausblenden
- Digital-Level-Monitor
   Hier werden alle wichtigen Werte und Einstellungen angezeigt (Rec-Level, Line Out Pegel, Dolby usw.)
- Laufwerkfunktions-Speicher
   bis zu 8 Laufwerkfunktionen sind abzuspeichern und können hintereinander abgerufen werden

besitzt dieser Recorder ein Quick-Reverse-System.

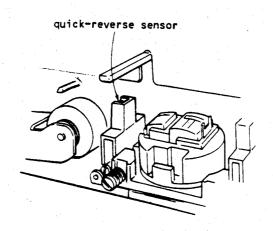
Welche überlegung steht dahinter?

Logischerweise ist ein im Auto-Reverse-Betrieb arbeitender Recorder für die Aufnahmefunktion nur dann interessant, wer während der Aufnahme schnellstens bei Bandende auf Reverse-Betrieb - also in die andere Laufrichtung - umgeschaltet wird. Bei den meisten Recordern erfolgt diese Umschaltung allerdings erst, wenn der Cassettenlauf anhält. Da jede gute Cassette jedoch ein Vor- bzw. Nachspannband besitzt, geht wertvolle Zeit verloren, in der nichts aufgezeichnet wird. Darum entwickelte SONY ein Quick-Reverse-System, das wie nachfolgend beschrieben arbeitet:

# **Technik als Verkaufsargument**

- Seite 2 -

Bezogen auf die normale Vorwärts-Laufrichtung sitzt vor der Kopfeinheit ein Infrarotsensor, dem gegenüber ein Reflektor angeordnet ist. Da die Oberflächen und damit auch die optischen Eigenschaften des Magnet- und des Vorspannbandes unterschiedlich sind, kann dieser Sensor erkennen, wann das Magnetband aufhört. Diese Information wird an die Systemkontrollsteuerung weitergegeben. Die Folge hiervon ist, daß der Recorder am Ende des Magnetbandes, also bevor der Cassettenlauf anhält, schon auf die Reverselaufrichtung schaltet und nur mit minimaler Unterbrechung weiter aufzeichnet. Dieses Quick-Reverse-System kann ein- oder ausgeschaltet werden. Im abgeschalteten Zustand wechselt der Recorder, wie die meisten seiner Mitstreiter erst beim Anhalten des Cassettenlaufs. Die nachfolgende Skizze zeigt die Anordnung des Quick-Reverse-Sensors auf der Kopf- Basis-Platte.



WE/kr. 08'84